U.S. DEPARTMENT OF COMMERCE
National Technical Information Service

PB-258 528

Construction Grants Study

Mitre Corp, McLean, Va

Prepared for

Federal Water Quality Administration, Washington, D C

Apr 70

273080

**FWQA REPORT NO.
14-12-845/70**

PB 258 528

CONSTRUCTION GRANTS STUDY

THE MITRE CORPORATION

FINAL REPORT

CLEAN WATER

REPRODUCED BY
NATIONAL TECHNICAL
INFORMATION SERVICE
U. S. DEPARTMENT OF COMMERCE
SPRINGFIELD, VA. 22161

U.S. DEPARTMENT OF THE INTERIOR
MARCH 3, 1849

**FEDERAL WATER QUALITY ADMINISTRATION
WASHINGTON, D.C. 20242**

BIBLIOGRAPHIC DATA SHEET

1. Report No.

2.

3. Recipient's Accession No. PB-258 528

4. Title and Subtitle

Construction Grants Study

5. Report Date Apr 70

6.

7. Author(s)

8. Performing Organization Rept. No. FWQA 14-12-854/70

9. Performing Organization Name and Address

Mitre Corporation
McLean, Virginia

10. Project/Task/Work Unit No.

11. Contract/Grant No.

12. Sponsoring Organization Name and Address

13. Type of Report & Period Covered

14.

15. Supplementary Notes

16. Abstracts

Results of a study of the Construction Grants Program are presented, and recommendations are made for improving the program as a means of reaching national water quality goals. Processing of grant applications and project work is performed smoothly and efficiently, but there is very little coordination between the issuance of construction grants and the implementation of river basin plans, as required by legislation. Detailed recommendations are made relative to processing of applications and projects, planning, financing of construction grant projects, and transfer of new technology into practical application through the Construction Grants Program.

17. Key Words and Document Analysis. 17a. Descriptors

*Sewage treatment,
*Industrial waste treatment,
*Water pollution abatement,
*Grants,

Industrial plants,
Construction,
Project planning,
Recommendations,
Water pollution control,
Research projects,
Financing,
Technology transfer.

17b. Identifiers/Open-Ended Terms

*Sewage treatment plants.

17c. COSATI Field/Group 13 B

18. Availability Statement

National Technical Information Service
Springfield, Virginia 22161

19. Security Class (This Report) UNCLASSIFIED

20. Security Class (This Page) UNCLASSIFIED

21. No. of Pages 221p

22. Price 7.75/3.00

CONSTRUCTION GRANTS STUDY

FINAL REPORT
OF
FINDINGS AND RECOMMENDATIONS

FOR THE

FEDERAL WATER QUALITY ADMINISTRATION

DEPARTMENT OF THE INTERIOR

FWQA REPORT NO. 14-12-845/70

APRIL 1970

THE MITRE CORPORATION
Washington D.C. Operations

FWQA Review Notice

This report has been reviewed by the Federal Water Quality Administration and approved for publication. Approval does not signify that the contents necessarily reflect the views and policies of the Federal Water Quality Administration, nor does mention of trade names or commercial products constitute endorsement or recommendation of use.

ABSTRACT

Results of a study of the Construction Grants Program are presented, and recommendations are made for improving the program as a means of reaching national water quality goals.

Processing of grant applications and project work is performed smoothly and efficiently, but there is very little coordination between the issuance of construction grants and the implementation of river basin plans, as required by legislation. This is because river basin plans do not exist for all basins, and those plans that do exist often do not contain the information needed for implementation. It is strongly recommended that FWQA assume an active and agressive role in assuring that responsibilities for developing and implementing basin plans are clearly defined, and participate as necessary in planning and implementation actions.

Detailed recommendations are made relative to processing of applications and projects, planning, financing of construction grant projects, and transfer of new technology into practical application through the Construction Grants Program.

TABLE OF CONTENTS

	Page
LIST OF ILLUSTRATIONS	vi
LIST OF TABLES	vii
INTRODUCTION, SCOPE, AND METHODS	1
SUMMARY AND CONCLUSIONS	3
FINDINGS AND RECOMMENDATIONS	4
Criteria for Priority of Action	4
Planning	5
Technology Transfer	8
Management Information Systems and PPBS	9
Financing	11
Processing	14
Secondary Treatment Regulations	15
APPENDIX 1 CRITERIA FOR EFFECTIVE FWQA ACTION	17
APPENDIX 2 PLANNING	39
APPENDIX 3 RECOMMENDATION FOR ENHANCING TECHNOLOGY TRANSFER FOR CONTROL OF WATER POLLUTION	79
APPENDIX 4 MANAGEMENT INFORMATION SYSTEM	93
APPENDIX 5 FINANCING	99
APPENDIX 6 PROCESSING	147
APPENDIX 7 SECONDARY TREATMENT	191
APPENDIX 8 LISTING OF INTERVIEWS AND CONTACTS MADE BY THE STUDY TEAM	197
APPENDIX 9 LISTING OF RECOMMENDATIONS BY CATEGORY	213

Preceding page blank

LIST OF ILLUSTRATIONS

Figure Number	Title	Page
1-1	How Indices are Used	21
1-2	Proposed New Regulation	37
2-1a	Systems Program Management for Basin Planning (Functional Flow)	54
2-1b	Systems Program Management for Basin Planning (Functional Flow) Continued	55
2-1c	Systems Program Management for Basin Planning (Functional Flow) Concluded	56
2-2	Outline Flow of Operational Phase of a River Basin Plan	58
2-3	Recommended Organization	63
3-1	Projected Process for Improving Technology Transfer of Pollution Abatement Methods	84
5-1	Expenditures and Number of Projects for Small and Large Cities	106
5-2	W. J. Lopp Alternative I	131
5-3	W. J. Lopp Alternative II	132
5-4	W. J. Lopp Alternative III	133
5-5	Proposed Alternative by the Citizens Advisory Committee on Environment Quality	134
5-6	Actual Size of State Staffs Compared with Estimated Staff Requirements and Funding Levels	137
6-1	Illustrative Display of Regional CG Office Procedures	157
6-2	Example of "Filled-In" Form Letter	165
6-3	Example of Magnetic Tape Typewriter "Form Letter"	166

LIST OF TABLES

Table Number	Title	Page
2-1	Status of 3(a) Studies Now In Progress	44
2-2	Completed 3(a) Studies	46
2-3	Listing of 3(c) Grants	47
2-4	Water Resource Council Type 1 Studies	49
2-5	Water Resource Council Type 2 Studies	50
3-1	Required Steps to Implement The Process	86
3-2	Summary of Research and Development Projects by Subprograms	89
5-1	Status of Construction Grants Program	102
5-2	Previous Limitations on the Program	103
5-3	Administration Bills for Financing the Construction Grants Program	104
5-4	Estimated Cost of Developing Required Plans	110
5-5	States Which Provide 25% Matching Grants	114
5-6	Reported Needs and FY70 Entitlement by State	115
5-7	Administration Bills for Financing the Construction Grants Program	127
5-8	Alternative Legislative Proposal: S-3681	128
5-9	Alternative Legislative Proposal: S-3687	129
5-10	Alternative Legislative Proposal: S-3181	130
5-11	Regional Staff by Category	141
5-12	Construction Grants Administration Workload Statistics	142
5-13	Bases for Projections	143
5-14	Factors for Determining Regional Allocations	144
5-15	Construction Grants Administration Tentative Distribution of New Positions	145
5-16	Regional Averages of Project Costs - FY 1969	146

INTRODUCTION, SCOPE, AND METHODS

This report presents the results of a project established to study and evaluate the Construction Grants Program of the Federal Water Quality Administration (FWQA) and to make recommendations relative to the future operation of this Program.

Specific objectives of the study are:

- To recommend organization, procedures, and practices that will provide for an expanded Construction Grants Program which will assure an optimum use of funds in the abatement of pollution and enhancement of water quality.
- To examine the effectiveness of the Program and to make recommendations for improvement.
- To determine if any improvement can be effected in the processing time.
- To ensure that processing procedures adequately safeguard government funds and to make recommendations as appropriate.
- To enhance responsiveness and acceptability to states and localities.

The project was conducted by a study team comprised of personnel from the FWQA Headquarters, Office of Management Analysis, Construction Grants Program Office, and Office of the Assistant Commissioner for Operations, and from The MITRE Corporation (operating under contract). The project was directed jointly by MITRE and the Office of Management Analysis.

Information relative to the Construction Grants Program was acquired through a series of interviews with:

- Personnel from the following FWQA Headquarters Offices: Operations (Construction Grants, State Program Plans, Basin Planning, Systems Analysis and Economics), Enforcement and R&D.

- All FWQA Regional Offices;*

- Representatives of 18 local governments, 18 state governments, 10 special sanitary districts and river authorities;*

- Personnel from 25 engineering consulting firms throughout the United States.*

Findings were analyzed and recommendations formulated by the entire study team. The final compilation of recommendations as presented in this report was prepared by The MITRE Corporation.

Recommendations falling into three general categories - criteria for decision, planning, and management information systems - have broad application across all FWQA programs. Recommendations in four other areas - technology transfer, financing, processing, and secondary treatment - are focused primarily on the Construction Grants Program. Recommendations falling into these seven categories are summarized in the following section. A more detailed discussion of these areas and their associated recommendations appears in Appendices 1 through 7. A list of all recommendations appears in Appendix 9.

Although outside the scope of this study it is important to note that a new Maryland law establishing a single state-wide authority with exclusive right to treat and control the disposition of liquid waste into bodies of water has recently been passed. It is a major departure from present practice, and should be examined closely because of its possible broad political and financial implications to the total concept of achieving water quality goals.

---

*A listing of organizations visited and personnel interviewed appears in Appendix 8.

SUMMARY AND CONCLUSIONS

The original objective of the study was to review the processing of construction grants applications and the overall effectiveness of the Program. It was found that the processing of grants ran rather smoothly and requires only minor tuning. However, the objective of the Construction Grants Program to meet water quality goals was in serious jeopardy due to a lack of coordinated planning and criteria to determine whether resoures are focused effectively. As a result there are serious obstacles in getting states to move expeditiously toward meeting water quality goals.

In essence, it is recommended that FWQA assume an active leadership role as a promulgator of plans and resources to meet water quality goals on schedule, as opposed to being a passive recipient of requests for funds.

To accomplish this, national level criteria for action, coordinated planning down to the river basin level, enhanced technology transfer for new advanced waste treatment processes, adequate information for management decision making and control, effective financial strategies, and a responsive organization at all levels are required. The recommendations in this report can be implemented to provide the proper organization and tools to meet this challenge, but can only do so with complete management participation and control from the "top down" level.

FINDINGS AND RECOMMENDATIONS

Criteria for Priority of Action

Findings - Criteria for setting priorities for actions to reach water quality goals (i.e., achieving standards) are lacking at present, and must be developed rapidly. Effective, national level planning cannot proceed without these criteria.

Recommendations - That criteria consisting of indices for water pollution, need assessment and priority for action should be developed immediately. These indices should be formulated on a source base and aggregated to provide indices for states and water basins. Available data should be used, but estimates and value judgments will of necessity be used where data are unavailable to produce initial indices rapidly. A MITRE-developed technique, Structured Value Analysis, can provide the methodology to implement the indices. Parameters for the indices and the methodology are detailed in Appendix 1.

Rationale - Effective use of funds by FWQA cannot be assured without consistent, visible criteria for determining (1) the pollution situation in terms of the amount of inadequately treated wastes; (2) assessment of needs in terms of water quality standards, usage requirements, population factors, geography, and treatment capability and (3) capability of the localities and states to attack the problem. The relationship among the pollution situations, needs, and capability for action, along with the rational indices, will provide the insight required to make decisions to insure effective focusing of funds to reach water quality goals.

Implementation - Existing data in the STORET system* and the Immediate Needs Reports** will provide an initial data base for municipal and industrial sources. A set of proposed model parameters and the components of each index have already been developed by MITRE with FWQA consultation and are detailed in Appendix 1. This set along with estimates to fill gaps in the data base and value judgments to determine relative importance of parameters can be used with

---

*STORET - An existing FWQA information system for the acquisition of water quality and hydrological data.

**Immediate Need Reports - A set of FWQA reports developed in 1967 which point out major sources of pollution along with other data.

Structured Value Analysis to produce an initial set of indices by August 1970. Verification and updating of these indices using better data will follow in an evolutionary manner.

Impact - These criteria will represent quantitative measures of the status and effectiveness of the FWQA program to obtain water quality goals, and the effect of alternate strategies to reach these goals can be assessed.

FWQA management will have an important tool for decision making on program steps that is visible, consistent, and directly applicable for PPBS and Bureau of Budget requirements. These indices provide measures of program effectiveness which together with cost estimates can provide direct measurement of cost-effectiveness.

Planning

Findings - There is no overall plan at the national level for focusing FWQA and other resources for meeting water quality goals in a timely and cost-effective manner. Along with the criteria above, an important component of a national plan of action is the existence of implementable comprehensive river basin plans, including an implementation schedule for action, for all basins.

Planning requirements have been poorly defined, and a structured coordination between construction grants and the various types of planning is nearly non-existent. The present status of comprehensive river basin planning (as provided for under Section 3 of the PL660) does not provide the necessary planning basis for effective use of construction grant funds.

Recommendations - FWQA should rapidly formulate a national program plan for action including:

- Statement of goals, objectives, and policies;
- Schedule for implementable actions, responsibility assignments, and milestones;
- Criteria and priorities;
- Monitoring and enforcement capabilities;
- Information for management decision making;
- Coordination with other agencies for all types of pollution abatement;

In order to insure that states and water basin commissions develop acceptable, implementable comprehensive river basin plans for each major and minor basin, Federal planning guidelines are necessary to define the structure and content of river basin plans, including schedules for action, and to provide the necessary criteria for States to certify that specific projects conform to metropolitan and regional plans.

Prior to the development of these comprehensive river basin plans, it is necessary that FWQA leadership fill the gap by providing "top down," federal level water quality plans and schedules for action for each basin. The existence of these plans in the immediate future will provide required guides and enhance coordination in the planning efforts by the states and river basin commissions, as well as fill the immediate requirements of the national level plan.

Details of findings and recommendations are described in Appendix 2.

Rationale - Timely and systematic abatement and prevention of water pollution caused by inadequate treatment of municipal sewage and industrial wastes can only be accomplished from systematic planning of river basins, including basins with exceptional problems, e.g., acid mine drainage. Only a well-developed river basin plan can provide the proper scheduling, regionalization, and degree of treatment necessary for insuring proper abatement and control, including optimization of the Construction Grants Program in a cost-effective manner.

Without an FWQA national level plan and schedule for action, no coordinated planning, focusing of resources, or control of progress can be accomplished. The absence of an overall national level plan is crippling.

Implementation - FWQA should develop a national level plan with at least the following components:

- Statement of goals, objectives, and policies,
- Schedule for action, responsibility assignments, and milestones to reach water quality goals
  - Planning
  - New technology
  - Implementation

- Criteria for effective focusing of resources; and assessing, and presenting program status
- Implementable, comprehensive plans for all water basins
    - Initial "top down" FWQA plans and schedules for action as guidance
    - Certified state and water basin commission plans with acceptable schedules for implementation
- Coordination of all types of environmental pollution abatement and utilization of natural and other resources
- Monitoring and enforcement effort to assure adherence to plans and timely implementation.

By means of a "top down", national-level plan, FWQA must take the lead in developing implementable basin plans for all river basins, which must include schedules of action and other specific elements specified in Appendix 2. Development of such a national-level plan should be commenced by incorporating all of the present planning completed by local, regional or state agencies (provided this planning is substantial and up-to-date). FWQA regional personnel should begin immediately to form first-cut but implementable plans for each basin in their region, utilizing existing plans to the extent possible. This effort should be scheduled to provide interim results quickly, with refinements and fully detailed plans to follow. Increased and better defined requirements for 3c grants and Framework II studies should be made so the resulting plans can be directly implemented. Liaison and equal status between Construction Grants and Planning should be developed so that by the end of 1970 Construction Grants will be the implementation arm of Planning.

Guidelines to states and water basin commissions developed by FWQA are a necessary step to assure that the states and water basin commissions accomplish their planning in a manner consistent with FWQA requirements and that eventual state and water basin certification of plans are directly usable for implementation. The guidelines should define the structure and minimum required content of such plans.

Impact - The development of a national plan will enable FWQA to provide the leadership, energy, and means to reach water quality goals. Time and money spent in planning will produce large rewards in assuring timely, cost-effective implementation.

Dynamic comprehensive river basin plans will provide the necessary tool for deciding the degree of construction necessary to obtaining and maintaining water quality standards in the quickest and most efficient manner.

FWQA, states, and localities will have the necessary information for initiating construction grant applications.

Technology Transfer

Findings - The present R&D program has had little impact in getting new technology into wide-scale use in the fragmented water pollution community. A major barrier to this transfer is the unwillingness of consulting engineers and users to assume risks in implementing new processes.

Recommendations - A method of technology transfer is proposed, which reduces risks by including a federal certification process, and involves joint technology transfer teams aimed at involving Construction Grants personnel early in the transfer process. Appendix 3 discusses the problem and proposed recommendations in detail.

Rationale - The transfer of an innovative technological advancement, to wide-scale usage and acceptance, generally takes from 10 to 15 years. This is especially evident in the fragmented sanitary engineering field. The present R&D program is relatively new, but only two phosphate processes out of 571 construction grant oriented R&D projects have had any usage in the field. The resistance of older municipal and state employees to learn new processes and consulting engineers to assume the risks involved must be overcome.

A concerted, continuing effort to disseminate results of R&D grants and contracts is certainly required. However, a methodology to focus resources to enable the transfer of technology to take place in a period shorter than five years is both possible and necessary.

Implementation - The methodology for enhancing the technology transfer interface between R&D and the Construction Grant Program users consists of two major emphases. The first is a certification process aimed directly at minimizing risk to users by certifying new and existing technologically advanced projects. Certification criteria developed by FWQA will be used for the actual certification of processes. The criteria are critical since risk is transfered from the user to FWQA in large part.

Initially this certification would be for new process and techniques. If this is shown to work, then it is possible to consider certification of all processes such as the Federal Aviation Agency (FAA) uses to certify all aircraft, both initially and on a periodic basis. This type of certification would require enabling legislation, but would provide both quality control and minimization of risks.

The second emphasis is the establishment of joint R&D and CG technology teams at the regional level for specific projects. The aim is to assign responsibility for transfer in a defined manner, and to involve CG personnel into the transfer process at an earlier level.

Impact - New technology for pollution abatement is necessary both to reduce the costs and time to implement control and abatement programs. A certification process will involve higher initial costs for demonstration grants to facilitate realistic certification, but can pay off if cost-effective new processes are introduced earlier. Careful selection of processes for certification to assure high payoff, minimum risk, and universality of application will minimize risks to FWQA associated with process failure.

Establishment of technology transfer teams in the regions may require some increase in personnel. However, this depends on the number of certification processes undertaken.

Management Information Systems and PPBS

Findings - There is no comprehensive system for providing information to FWQA management on all FWQA major activities for decision making and taking action in the field or at Headquarters.

Program planning and supporting financial data are not maintained in consistent, compatible categories among the Regions, hence, cannot be readily consolidated and correlated at the Headquarters level.

An existing information system, operated by the Headquarters Office of Construction Grants, produces a series of periodic reports depicting the status of projects in the Construction Grants Program, and provides special sorts and printouts from its data base, which is oriented largely to construction projects and other construction grants data. This system is not fully responsive to requests for construction grants data, either in terms of response time or in terms of adequate information to support management requirements.

Recommendations- To achieve the goal of timely, current information for FWQA management at the Commissioner, Headquarters, and Regional levels, FWQA should immediately institute a consistent management information system to provide information for decision making and also provide capability for program planning and budgeting (PPBS) throughout its entire organization. This would result in an integrated, organization-wide management information system for assembling and summarizing the information into reports appropriate to the various elements of management, and for delivering these reports in a timely manner. This is discussed in detail in Appendix 4.

Rationale - When information for management decision making and information pertaining to program status, planning, budgeting, etc. is maintained in different forms and categories by different parts of an organization, it cannot be readily summarized to depict the status of activities across the entire organization. Therefore, a consistent system of data acquisition and maintenance should be employed throughout the organization. Such a system should be compatible with and be able to supply inputs to the Bureau of Budget PPBS system, but should primarily be aimed at serving the information needs for decision making at all FWQA management levels.

For prompt processing, summarization, and dissemination of management data within an organization the size of FWQA, an automated system may be needed. The system should be designed to provide summary reports with contents and timing keyed to the needs of various levels of management, and covering all major activities within the organization. A system that cuts across all major activities becomes increasingly important as the requirement for coordination among these activities, particularly CG and Planning, is imposed.

A management information system has one primary purpose: to provide an improved basis for decision making. This requires that information be relevant, accurate, available, and timely. The system must have a rapid response capability, and in particular it must provide for exception reporting and continuous monitoring when critical decisions are involved. Paperwork must be minimized by storing data in an accessible form. The system must provide for rapid updating of the file status, rapid interrogation of files and flexibility to respond to variable usage on an as-required basis.

The distinction between data and information must be recognized. Management should not be burdened with reams of meaningless raw data, but only that condensed information, aggregated purposely from the data, required for input to a decision. The control of input data is highly important since an information system can influence decision making by biases in and interpretations of the data.

Implementation - The specific information needs of each management level (contents and timing) must be established, and a system of data acquisition and processing designed to meet these needs. The system design should utilize the existing systems insofar as applicable. This effort could be completed on an evolutionary basis so that information will be available as soon as possible and that needed information is not held back until completion of the system. Automation would proceed only on a justifiable, cost-effective basis, using existing equipment where possible.

Impact - Management data of all types - project status, planning status, budgets and expenditures, projected needs, etc. - would be available to FWQA managers as needed for decision making and supplying BoB needs directly, and thereby provide a necessary information base for all management decisions requiring such information. The system would thereby contribute directly to the overall task of obtaining water quality goals.

Financing

Findings - Construction Grant funds have not been applied to the areas of greatest pollution control need due to restrictive allocation formulas, inadequate state criteria and municipal incentives, and lack of comprehensive planning. Federal funding has been uncertain and inequitable. The schedule of payments to localities results in the need for interim financing at excess cost to the cities and towns. Resources are lacking to carry out effective planning. Funds provided by other federal agencies, such as the Department of Housing and Urban Development (HUD), Economic Development Administration (EDA) in the Department of Commerce, and The Farmers Home Administration (FHA) in the Department of Agriculture, are not well coordinated. In many cases ineffective use of resources results from this lack of coordination.

Recommendation - Each of the findings has been addressed by specific recommendations which are discussed in detail in Appendix 5.

- Develop federal criteria for applying funds to the greatest need. These criteria for priority of action are summarized in a preceding section, and are discussed in detail in Appendix 1.

- Consider additional provisions for proposed legislation. The Administration has submitted proposed legislation to Congress with the intent of providing adequate funding, decreasing the uncertainties and inequities felt by communities planning for the use of those funds, and making more effective use of those funds. It is recommended that in addition to the provisions of those bills, the following be considered:

    - Further modify the allocation formula to take into account reported state needs.

  - Provide additional incentives to states, water basin regional compacts, and metropolitan areas to set up corporate entities to treat all liquid wastes within that state (as Maryland has done), region, or area.
  - Take 20% of the appropriation for payment on the reimbursibles, in addition to the 20% allocated on the basis of state payments and 20% allocated on the basis of severity of water pollution control problems and the ability to use funds.
  - Provide the Secretary with explicit authority to allocate the latter funds to specific projects within needy states as he may determine.
  - Require each enforcement conference to consider the financing for the actions directed and report on the arrangements made to finance the projects.
  - Establish rules for the extension of capability by the Environmental Financing Authority to purchase bonds of municipalities on the basis of the need for the proposed treatment works.

- Align the cash flow to communities more closely to facilities construction. This can be accomplished in the following ways:
  - Provide funds up to, say, 5% to 15% of the grant when the construction contract is signed;
  - Provide other than quarterly payments during construction upon request by the communities.

- Increase funds and manpower for planning
  - Request additional funds under Section 3c of the Act to assist the State in carrying out comprehensive water basin planning;
  - Request additional funds to provide four additional planning personnel in each FWQA Region and five at Headquarters;
  - Develop regulations to provide for the use of a percentage of Construction Grant funds for detailed engineering surveys and planning for regional and metropolitan treatment plants.

- Consolidate federal grants for the purpose of planning and construction of sewers, treatment plants, and other liquid waste handling facilities under one granting agency. During the period of time that this consolidation is being effected, form immediately an interim agency operating group at the national level with counterpart groups at the (federal) regional level to coordinate and administer all water quality-related grants now issued by FWQA, HUD, EDA, and FHA.

Rationale - In order to insure that funds are applied to the areas of greatest need to control pollution, rational criteria must be provided for setting priorities. These priorities will be essential if Congress approves the Administration's request for 20% of the funds to be granted at the discretion of the Secretary to the areas of greatest need. These criteria can also be used to influence and motivate states to apply the same criteria for setting state priorities. These criteria were discussed above.

Furthermore, incentives must be provided to stimulate states and communities to act in accordance with the priorities and plans. Four major incentives are recommended, namely, (1) assurance of federal funds (already in the requested legislation); (2) maximum effective federal and state funding (up to 75% cash grants); (3) higher priority and assurance of funds for previous good performance such as higher ranking in criteria for action; and (4) ready sale of municipal bonds. In addition, the effective use of funds is further enhanced by providing payments at a schedule to decrease or eliminate the necessity for short-term borrowing.

Additional major funds are needed for planning despite previous significant expenditures. As discussed in the section on planning, above, the FWQA planning effort must be re-directed to accomplish plans capable of direct implementation by the Construction Grants Program.

Finally, coordination of sewerage and other waste projects with other federal agencies is required to avoid the necessity of building treatment plants oversized to handle a volume of wastes which does not materialize or to avoid building treatment plants too small to handle unforeseen growth in volume of wastes.

Implementation - Legislation is required to accomplish the full range of recommendations to achieve effective, efficient, and equitable use of federal funds. However, by directive and changes to existing regulations, the criteria and national plan can be provided, and municipalities may be relieved to a certain extent of their short-term borrowing. Also a certain amount of increased funds and manpower can be provided and coordination among Federal agencies can be accomplished.

Impact - The result of these recommendations is to put the money where it will have the most effect in reaching water quality goals. Specifically it can provide direct financial incentives to the states and municipalities to attack the problems facing them.

The subject of financing is discussed at greater length in Appendix 5.

Processing

Findings - Processing of grant applications and project work following grant offers were reviewed in each region. Two important observations, common to all regions, were:

(1) Consulting, state and metropolitan engineers report that FWQA Construction Grants processing activity is responsive, efficient, and needs only minor tune-up.

(2) Though each region is doing a good job, there is no uniform inter-regional system for defining program elements and accounting for associated manpower, schedules, and costs.

Recommendations - Specific recommendations are made in five categories which are discussed in detail in Appendix 6.

(1) Improve the quality of applications as received by FWQA.

(2) Simplify certain procedures.

(3) Delete or improve cost-ineffective labor compliance and legal/administrative cost functions.

(4) Increase consistence of procedures between regions and headquarters, eliminating "flexibility" where it causes more problems than it ameliorates.

(5) Improve relations with states, applicants, and others by adopting FWQA-wide policies where feasible.

Rationale - The first three recommendations are clear. The fourth is intended to improve FWQA's responsiveness to:

- Changes in program content, as operation and maintenance, or technology transfer
- Changes in appropriations.

An improved planning, programming and budgeting, and management information system as discussed in preceding sections would entail the needed improvements. As a result standardization would be effected in areas where "flexibility" is not important. Excessive flexibility makes management of procedural tasks on a national basis unnecessarily difficult, resulting in a severe problem when justifications for adjustments in manpower and budget are required of regional managers.

Implementation - Construction Grants program managers contacted generally support the recommendations shown. The step of standardizing practices in regions even on minor matters such as checklists, etc., will be a departure from current practices. The primary implementation step is seen to be the decision at higher management levels to adopt uniform practices and policies where possible.

The newly instituted program by Operations to determine minimum standards for structure, content, and methodology of engineering plans is a good example. As a result, the reviewing of engineering plans in the regions can be reduced, and the man-hours saved applied to other areas.

Impact - FWQA will be able to manage and operate its entire program more effectively. Since most Construction Grants managers support the recommendations shown, acceptance and cooperation are expected. It is doubtful that a saving in dollars will be realized, but improved, more effective service with present levels of manpower is as worthy a goal.

Secondary Treatment Regulations

Findings - Proposed regulations on secondary treatment imply the universal application of secondary treatment for construction grants. Secondary treatment is highly cost-effective in reducing BOD in streams. Nevertheless, some flexibility on an exception basis is desirable.

Recommendations - Secondary treatment be a requirement for all municipal treatment works except:

(1) Where lesser degree of treatment can be shown to meet applicable water quality standards and a firm commitment and an FWQA-approved schedule exist for achieving the required minimum ("secondary") treatment by later improvements to the projected works.

(2) In the case of wastes discharged by a project into open ocean waters through an ocean outfall, such treatment shall be designed to provide as a minimum for: substantially complete removal of all floatable and settleable materials, and such additional treatment as may be necessary to meet applicable water quality standards and recommendations of the Secretary or order of a court pursuant to Section 10 of the Federal Act.

It is recommended that grants for interceptor sewers require that they flow to plants providing secondary treatment or the alternative stipulations specified above.

Rationale - Secondary treatment is more cost-effective for BOD reduction than primary treatment. For an incremental cost of 30% above that for primary treatment the BOD removal increased 140% above primary.

Implementation - Implementation by FWQA regulations is proposed.

Impact - Total BOD removal will increase, for a given dollar expenditure, if secondary treatment plants are built instead of primary treatment plants.

The subject of secondary treatment is discussed in detail in Appendix 7.

APPENDIX 1

CRITERIA FOR EFFECTIVE FWQA ACTION

		Page
1.0	NEED AND DEVELOPMENT OF CRITERIA	19
2.0	WATER POLLUTION INDEX	22
3.0	NEED ASSESSMENT INDEX	28
4.0	PRIORITY INDEX FOR ACTION	31
5.0	LIST OF POLLUTANT SOURCES	34
6.0	NEW FWQA REGULATIONS	35

APPENDIX 1
CRITERIA FOR EFFECTIVE FWQA ACTION

1.0 NEED AND DEVELOPMENT OF CRITERIA

Criteria for setting priorities for actions to reach water quality goals (i.e., achieving Federally-approved standards) are lacking at present, and must be developed rapidly. Effective national level planning cannot proceed without these criteria. Unless quantifiable measures are available, realistic planning cannot be done and progress cannot be ascertained. Application of resources in a cost-effective manner cannot be assured unless measures of effectiveness, such as the criteria proposed, exist in a visible, quantifiable manner.

1.1 Requirements of Criteria for Effectiveness

Many attempts have been made previously to develop suitable criteria for effectiveness. In general, their findings have resulted in confusion, since situation, need, and action parameters have been lumped with one another or require an unavailable data base.

Indices for situation, need, and action are needed for assignment of priorities. These indices must be separated and used only for ranking since precise measurement scales and complete data are seldom available. They must stand the test of reasonableness since, at best, they are quantifications of the intuitive experience of experts in the field. The indices which provide the necessary criteria for effectiveness and are proposed here are just this experienced intuition. However, they are derived by a methodology that teases out the maximum information in the intuitive process of getting things done and quantifies this information in a highly useful manner.

To adequately separate situation, need, and action factors, three types of indices are proposed.

Pollution Index - This is a situation index which relates the amount of effluents entering the disposal system, less the natural and technological treatment capabilities, and considers the dilution of the volume of water flowing.

Need Assessment Index - The pollution index together with the water uses, which determine water quality standards, demography and geographic parameters will be used to assess the need for treatment of all types. The index will provide a ranking of needs.

Preceding page blank

Action Priority Index - Based upon the need assessment index and the parameters that make implementing action possible, such as implementing and management skills, financial capability, and coordination with FWQA objectives, will be taken into account.

The indices will be determined on three different bases: by pollution source (municipal and industrial), by water basin, and by state. As a result, a ranking of all municipalities, water basins, and states for each index will be made. These rankings will be used in two ways. A national level basis is also proposed for the first two indices. These will provide a measure of the progress of the overall program over time for the pollution situation and needs.

First, a control map for each index by source, river basin and state will be set up covering the nation with the indices shown as rankings. Secondly, together with the cost of action, a cost-effective presentation of action criteria will be developed which is directly available for input to the Planning, Programming and Budgeting System (PPBS) and the Bureau of Budget. These rankings and presentations will be available for the Commissioner to use in decision making and presenting to other agencies and to Congress.

These indices may be used for measuring progress, testing alternate situations, and for presentation as illustrated in Figure 1.1. The indices are tools for management decision making. Along with the national planning activities intended, projections of the future efforts of the program can be shown.

The indices may be developed using a technique called Structured Value Anlaysis (SVA). It uses available data and the value judgment of FWQA experts to determine the indices via computer assisted methods. In the absence of hard data, best estimates will be used to force rankings. Sensitivity analysis is used to determine the criticality of data elements and to evaluate the risk involved in making estimates.

SVA is a credible technique which has already been used successfully by MITRE in the following applications:

ESSA-U. S. Weather Bureau	Cost/performance
Internal Revenue Service	Cost/benefit
National Air Pollution Control Administration	Cost/performance Cost/effectiveness

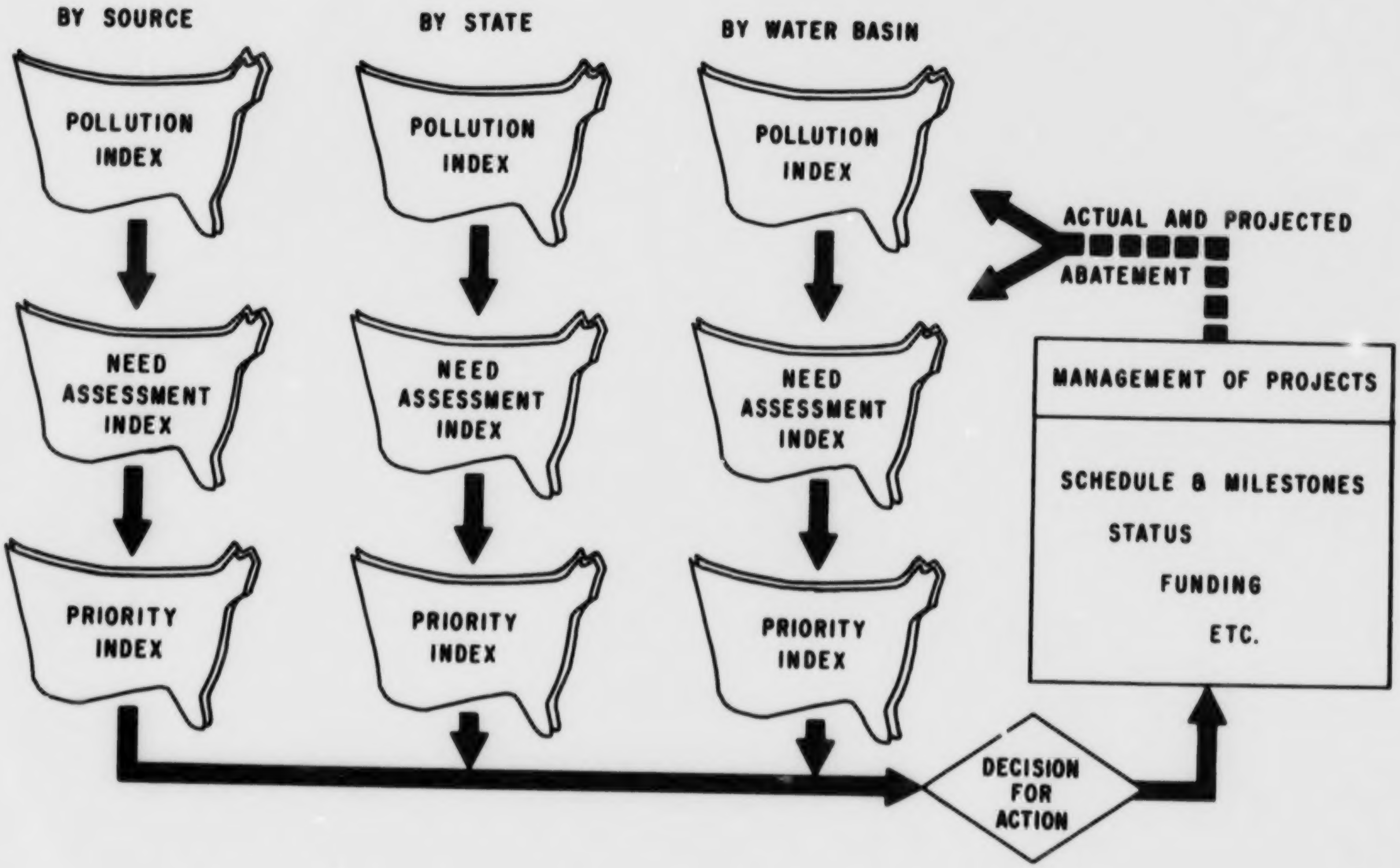

BY SOURCE
BY STATE
BY WATER BASIN
POLLUTION INDEX
NEED ASSESSMENT INDEX
PRIORITY INDEX
POLLUTION INDEX
NEED ASSESSMENT INDEX
PRIORITY INDEX
POLLUTION INDEX
NEED ASSESSMENT INDEX
PRIORITY INDEX
ACTUAL AND PROJECTED ABATEMENT
MANAGEMENT OF PROJECTS
SCHEDULE & MILESTONES
STATUS
FUNDING
ETC.
DECISION FOR ACTION

FIGURE I-1
HOW INDICES ARE USED

The technique to be used here is that for cost/effectiveness and will be used to construct the three levels of indices. The details of each index and their derivations are discussed below.

2.0 WATER POLLUTION INDEX

The lowest level index proposed is a pollution index which describes the pollution in terms of the amount of untreated wastes entering streams and water basins throughout the country. As such it measures the amount of pollutants without considering water quality standards, i.e., independent of water quality. Water quality standards are imposed at next higher level index which is a need assessment index.

The basic pollution index is on a source basis, and is then aggregated to provide basin wide and state indices as well as a national index. These indices are numerical rankings of the relative amount of pollution, and allow sources, basins, and states to be compared with one another on a consistent basis. The national index is meaningless by itself, but when used to relate levels over time due to the effect of the FWQA program will provide a measurement of the effectiveness of the abatement and control program.

2.1 Sources of Data

Data for the pollution index will be developed on a source basis; municipal waste, industrial and agricultural waste sources will be considered (Section 5.0). The existing municipal and industrial inventories will be used as an initial data source. The present industrial index is less than desired, but data are available from the Immediate Needs Reports and the regions for much of this information. Better data will eventually be available due to the proposed new FWQA regulations (Section 6.0) requiring each applicant to provide information on sources of pollution, volume of discharge and character of the effluent, as well as present treatment capabilities.

In cases where data are unavailable the best estimate of experts from the regions or staffs will be used. As further data becomes available the estimates will be updated. The statistical variation of estimates can be carried along. Biases, especially if they are on the high side will tend to force local authorities to seek to provide better data.

All source data must be mutually exclusive and collectively exhaustive to be perfect. In general, they probably will not be, but the degree of overlaps and gaps can be accounted by adjustment based on value judgment.

Once all the basic data are collected, an automatic data system will be generated. Then the data can be manipulated, updated, retrieved and aggregated as needed. As a byproduct, totals on individual pollutants can also be determined.

2.2 Structure of the Index

The indices are developed in two steps. The first step is to gather the data and aggregate it into a consolidated data entry for each pollutant at each level of aggregation. The second step is to enter these values into a Structured Value Analysis (SVA) value set, which then is the basis for a numerical index for a data set, consisting of pollution levels for each source.

Structured Value Analysis is a methodology to be applied to provide a consistent measure of water pollution indices for various sources, regions and states. It uses both available data and value judgments of experts. The objective is to tease out as much information as is available about the system, check it for validity, and/or utility in a manner which allows quantification and manipulation. Critical areas are identified by structured value analysis and indicate where further gathering of data would be most effective.

2.3 Index Generation

Let the basic data to be defined as follows as y_{ijk}:

y_{1jk} = Amount of pollutant per day

y_{2jk} = Amount of technological treatment of the pollutant per day

y_{3jk} = Amount of natural treatment (or decay) of the pollutant per day

y_{4jk} = Amount of water flow per day

where subscript k = 1 for source
= 2 for basin
= 3 for state
= 4 for nation

and subscript j stands for the pollutant.

The first datum y_{1j1}, which represents the amount of pollutant of various types, j, at each source, is available from municipal inventories. A recently proposed FWQA regulation (see Section 6.0) should, as soon as it goes into effect, produce more up-to-date data on the amount of discharge at each source. Estimates will be used when the data are unavailable.

The second datum y_{2j1}, which represents the amount of existing technical treatment of the pollutant at each source will also be available for each source applying for a grant from FWQA. In the meantime, we will have to depend on the value judgment of the experts from the various regions and localities to fill in where data are not otherwise available.

The datum y_{3j1}, which represents the biological or natural treatment is not so readily available. It must come either from value judgments of experts or a hydrobiological model considering entering levels of pollutant and flow parameters. In the initial criteria this datum may not be used. This will not alter the utility of the index, but will allow for further updating. For non-biologic pollutants, a decay rate may be used for estimation purposes.

The y_{4j1} datum is available both from water pollution planning documents and the U. S. Corp of Engineers. The units for y_{4j1} will be adjusted to assure maximum sensitivity of the index.

Then the net pollutant z_{jk} for source level, can be defined as follows:

$$z_{j1} = y_{1j1} - y_{2j1} - (y_{3j1}) \qquad (1)$$

where the parenthesis around the third term indicate possible omission.

For each pollutant the index component is defined as:

$$x_{j1} = (z_{j1}/y_{4j1}) \frac{1}{N} \qquad (2)$$

where N is a constant normalizing factor so chosen that the pollution indices lie between 0 and 1 from clean water to the most dirty water. The source level pollution index is then the weighted sum of untreated pollutants for all pollutants. The weights, a_j, are used to adjust for the relative importance of the individual pollutants with one another. The water pollution index (WPI) is then defined as:

$$WPI_1 = \sum_j a_j F_j (x_{j1}) \qquad (3)$$

At this time it is not certain that the division factor adjustment for dilution is the best index. An index without dilution will also be carried until a decision can be made.

$$x'_{j1} = z_{j1}/N \qquad (4)$$

$$WPI'_1 = \sum_j a_j F_j (x'_{j1}) \qquad (5)$$

2.4 Aggregation

y_{ij1} represents pollution amount of the source level. If m = number of sources in a basin then the basin level of pollution (k=2) is given by:

$$y_{ij2} = \sum_m y_{ij1m} \qquad (6)$$

and the dilution factor for a basin is y_{4j2} = flow at the mouth of the basin. Then

$$z_{j2} = y_{1j2} - y_{2j2} - (y_{3j2}) \qquad (7)$$

$$x_{j2} = (z_{j2}/y_{4j2}) \frac{1}{N} \qquad (8)$$

$$x'_{j2} = z_{j2}/N \qquad (9)$$

The basin level indices are then

$$WPI_2 = \sum_j a_j F_j (x_{j2}) \qquad (10)$$

$$WPI'_2 = \sum_j a_j F_j (x'_{j2}) \qquad (11)$$

If n = number of sources in a state then the state level of pollution (k=3) is given by:

$$y_{ij3} = \sum_n y_{ij1n} \qquad (12)$$

In a similar manner to aggregation for the basin, the state aggregation is as follows:

For y_{4j3} = sum of the flows of all rivers at the point the river leaves the state

Then

$$z_{j3} = y_{1j3} - y_{2j3} - (y_{3j3}) \tag{13}$$

$$x_{j3} = (z_{j3}/y_{4j3}) \frac{1}{N} \tag{14}$$

$$x'_{j3} = z_{j3}/N \tag{15}$$

The state level indices are then

$$WPI_3 = \sum_j a_j F_j \; (x_{j3}) \tag{16}$$

$$WPI'_3 = \sum_j a_j F_j \; (x'_{j3}) \tag{17}$$

For a national level index, let p = number of basins in the nation (k=4).

$$y_{ij4} = \sum_p y_{ij2p} \tag{18}$$

y_{4j4} = sum of flows at mouth of each basin

In a like manner WPI_4 and WPI'_4 are determined.

Weights (a_j) are value judgments which set the relative importance of each pollutant. For the indifference state they are set equal to each other. The functions are means for entering the bias of experts since high levels of pollution may require non-linear consideration of pollution severity. These functions are assumed to be linear if no bias is applied.

3.0 NEED ASSESSMENT INDEX

The second level index proposed is a need assessment index which is a measure of the need required based upon usage as determined by water quality standards, demography, geography and other factors. Parameters considered to construct this index are:

(1) Pollution Index (WPI)
(2) Water Quality Index (WQI)
(3) Total Population
(4) Population Density
(5) Percent Urbanization
(6) Land Area
(7) Water Area
(8) Proximity to Water
(9) Acceptability of State Standards
(10) Percent Sewered to Total Population
(11) Percent Sewered Waste Treated

3.1 Water Quality Index Generation

All the parameters except the pollution and water quality index can be directly used as terms with a weighting factor for the structured value analysis method. The water quality index takes into account usage and standards. At present, FWQA doesn't have its own set of water quality standards. For its own use, at least, FWQA should establish such a set. It can also be used to rate state standards used for indices.

Its existence may also influence upgrading of state standards, but might only be used for FWQA decision making as in these criteria. The water quality index is obtained as follows,

Let C_{ju} stand for FWQA's set of guideline criteria (standards) for each pollutant, j, and for each level of usage, u.

u = 1 Water Supply

u = 2 Recreation Including Bathing

u = 3 Recreation - Boating and Fishing

u = 4 Industrial Usage

u = ? For Additional Uses

Then the pollution level in terms of standards, R_{ujk} may be defined as follows:

$$R_{ujk} = M_{ujk} / NC_{ju} \qquad (19)$$

$M_{u,j,k}$ = the average measurement in units of C_{ju}

u = 1,..,? For levels of usage

j = 1,..,m For the pollutants

k = 1,..,4 For the four levels of aggregation (source, basin, state and nation)

N = normalizing factor to assure that the index runs from 0 to 1

Then the combined value may be defined as follows:

$$W_{jk} = \sum_{u} b_{uk} R_{ujk} \tag{20}$$

where b_{uk} is the fraction of total water allocated to usage, u and the total usage must equal unity, thus

$$\sum_{u} b_{uk} = 1$$

Further combine all the pollutants as follows to get the water quality index, WQI:

$$WQI_k = \sum_{j} a_j W_{jk} \tag{21}$$

where a_j is the relative pollutant weight.

3.2 Structure of the Index

The need assessment index, NAI, can be derived from above values, by the SVA method as follows:

$$NAI_1 = F_1(WPI) \cdot F_2(WQI) \quad \sum_{s=3}^{n} a_s F_s(X_s) \tag{22}$$

X_s = the input from the other parameters for the need assessment index.

3.3 Aggregation

All the parameters for the need assessment index for four levels of aggregation can be obtained directly. The water usage parameter can be aggregated as follows:

Based on W_{j1}:

$$W_{j2} = \frac{1}{m} \sum_{m} \frac{V_{j1m}}{V_m} \cdot W_{j1}$$ m = number of sources in a basin (23)

V = denotes volume rate of stream flow

and

$$W_{j3} = \frac{1}{n} \sum_{n} \frac{V_{j1n}}{V_n} \cdot W_{j1}$$ n = number of sources in the state (24)

for

$$Vm = \sum_{m} V_{j1m} \qquad (25)$$

$$Vn = \sum_{n} V_{j1n} \qquad (26)$$

Then the NAI at different level can be derived by using different W values.

To accomplish this aggregation the set of $W_{j1's}$ must be collectively exhaustive and mutually exclusive to be perfect. Generally, this will not be the case, but the degree of overlap and gaps can be estimated and value judgment used to make adjustments.

4.0 PRIORITY INDEX FOR ACTION

The highest index proposed is a priority index which is a measure for ranking abatement and preventing actions in order of priority to assure timely, effective results. Again the structured value analysis method can be applied directly once the model parameters are determined. At this stage, the following parameters are considered:

(1) Need Assessment Index

(2) Financial Capability

(3) Legality of Plans

(4) Planning Skill

(5) Management Capability

(6) Implementation Skill

(7) Operational Skill (Including Maintenance)

(8) Time to Complete -- Including Readiness to Go

(9) Enforcement Capability

(10) Coordination of Objectives with FWQA

(11) Technological State-of-Art

(12) Willingness to Cooperate on Wider Problem Scope

All the parameters should be scaled between 0 and 1. Among the above parameters the first three should be considered as "factors" (that is, controlling factors that can reduce the value of the priority index to zero). As an example, this arises because if the need assessment index has value zero that indicates there is no need, so the priority index should have value zero. The rest of the parameters should be defined as "terms" because even if some have zero value they should not set the priority index to be zero. Having defined the factors and the terms of parameters now we can define the priority index as follows.

$$PI_1 = F_1(NAI) \cdot F_2(FC) \cdot F_3(LOF) \cdot \sum_{t=4}^{12} A_t F_t(X_t) \qquad (27)$$

For NAI = The Need Assessment Index

FC = Financial Capability

LOF = Legality of Plans

X_t = All other parameter terms

This index is shown for the source level (k=1). To aggregate to the basin level the source priority indices for the sources, m, in the basin may be summed and divided by the number of sources. The result is a mean basin level index.

$$PI_2 = \sum_m PI_{1m} \Big/ m \qquad (28)$$

In the same manner a mean priority index for the state may be obtained for n sources in the state.

$$PI_3 = \sum_n PI_{1n} \Big/ n \qquad (29)$$

A priority index has no meaning at the national level that has yet been determined. Further, since an arithmetic mean is used to aggregate, the condition for mutually exclusive sources may not be relaxed, but the condition for collectively exhaustive sources may be.

5.0 LIST OF POLLUTANT SOURCES

Instead of trying to prepare a comprehensive list of all pollutants, whose number keeps on increasing with time, a selected set of the most important pollutants will be used. They will cover the following areas and will evolve as more is learned about them.

MUNICIPAL

- Municipal Wastes
- Urban Runoff

AGRICULTURAL

- Irrigation
- Farm Animals
- Cropland Erosion
- Cropland Runoff
- Logging

MANUFACTURING

- Primary metals
- Canning and Freezing
- Steam Power
- Pulp and Paper
- Lumber
- Transportation Equipments
- Chemicals

MINING

- Heavy Metals
- Acid
- Solids

OTHERS

- Spills and Vessels
- Natural Drainage
- Reservoir Management
- Dredging
- Phosphates

6.0 NEW FWQA REGULATIONS

The recently proposed FWQA Regulations, reproduced in Figure 1-2, provide the following information to qualify for consideration of grant.

(1) Sources of Pollution. An identification list of all significant waste discharges; municipal, industrial, agricultural and others.

(2) Volume of Discharge. The average daily volume of discharge produced by each waste discharger.

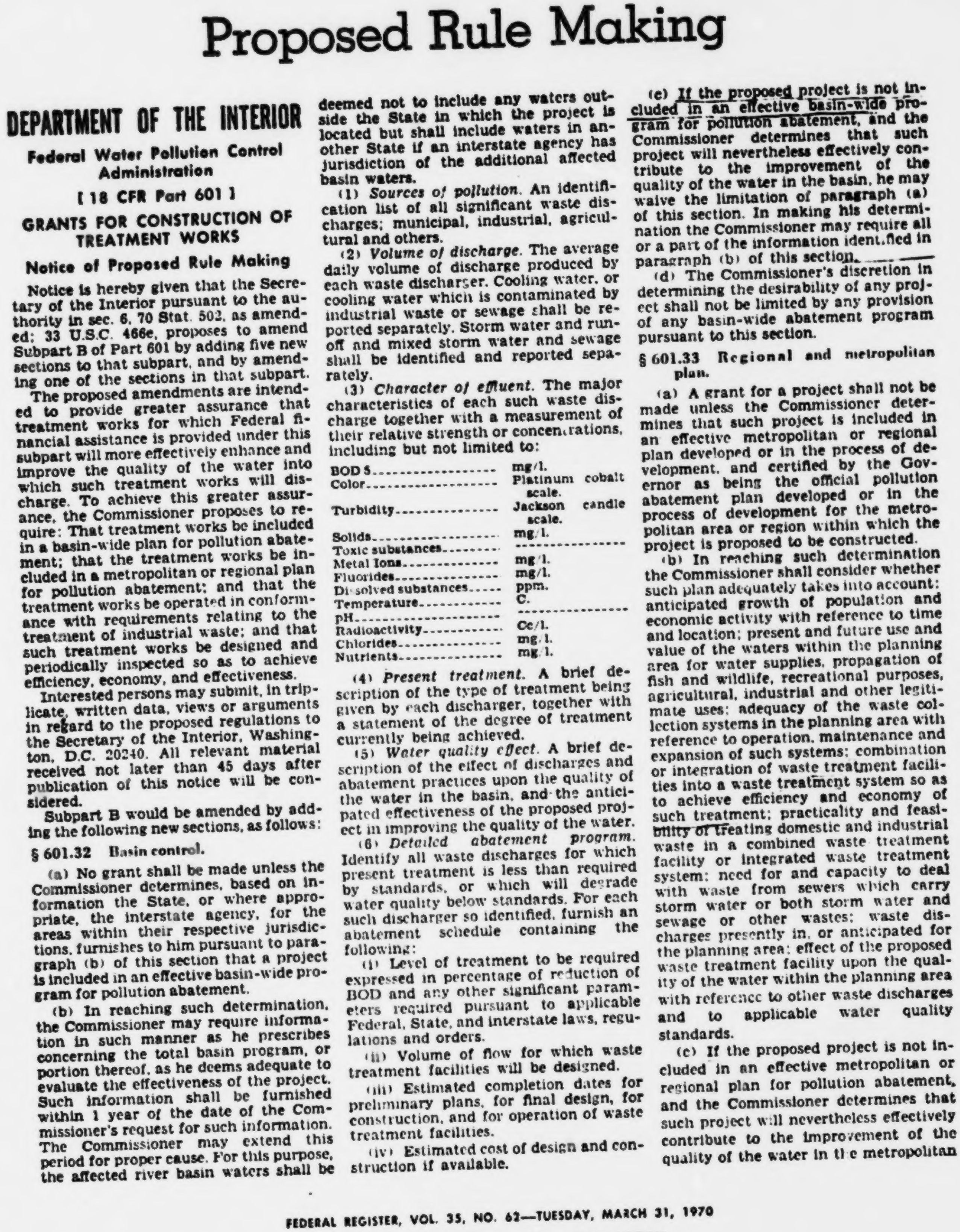
(3) Character of Effluent. The major characteristics of each such waste discharge together with a measurement of their relative strength or concentrations, including but not limited to:

BOD	mg/1
Color	Platinum cobalt scale
Turbidity	Jackson candle scale
Solids	mg/1
Toxic Substances	
Metal Ions	mg/1
Flourides	mg/1
Dissolved Substances	ppm

Temperature	C
pH	
Radioactivity	Cc/l
Chlorides	mg/l
Nutrients	mg/l

(4) Present Treatment. A brief description of the type of treatment being given by each discharger, together with a statement of the degree of treatment currently being achieved.

The proposed regulation provides a powerful future source of data, which can be used in evolving amore accurate measure of pollution.



Proposed Rule Making

DEPARTMENT OF THE INTERIOR

Federal Water Pollution Control Administration

[18 CFR Part 601]

GRANTS FOR CONSTRUCTION OF TREATMENT WORKS

Notice of Proposed Rule Making

Notice is hereby given that the Secretary of the Interior pursuant to the authority in sec. 6, 70 Stat. 502, as amended; 33 U.S.C. 466e, proposes to amend Subpart B of Part 601 by adding five new sections to that subpart, and by amending one of the sections in that subpart.

The proposed amendments are intended to provide greater assurance that treatment works for which Federal financial assistance is provided under this subpart will more effectively enhance and improve the quality of the water into which such treatment works will discharge. To achieve this greater assurance, the Commissioner proposes to require: That treatment works be included in a basin-wide plan for pollution abatement; that the treatment works be included in a metropolitan or regional plan for pollution abatement; and that the treatment works be operated in conformance with requirements relating to the treatment of industrial waste; and that such treatment works be designed and periodically inspected so as to achieve efficiency, economy, and effectiveness.

Interested persons may submit, in triplicate, written data, views or arguments in regard to the proposed regulations to the Secretary of the Interior, Washington, D.C. 20240. All relevant material received not later than 45 days after publication of this notice will be considered.

Subpart B would be amended by adding the following new sections, as follows:

§ 601.32 Basin control.

(a) No grant shall be made unless the Commissioner determines, based on information the State, or where appropriate, the interstate agency, for the areas within their respective jurisdictions, furnishes to him pursuant to paragraph (b) of this section that a project is included in an effective basin-wide program for pollution abatement.

(b) In reaching such determination, the Commissioner may require information in such manner as he prescribes concerning the total basin program, or portion thereof, as he deems adequate to evaluate the effectiveness of the project. Such information shall be furnished within 1 year of the date of the Commissioner's request for such information. The Commissioner may extend this period for proper cause. For this purpose, the affected river basin waters shall be deemed not to include any waters outside the State in which the project is located but shall include waters in another State if an interstate agency has jurisdiction of the additional affected basin waters.

(1) *Sources of pollution*. An identification list of all significant waste discharges; municipal, industrial, agricultural and others.

(2) *Volume of discharge*. The average daily volume of discharge produced by each waste discharger. Cooling water, or cooling water which is contaminated by industrial waste or sewage shall be reported separately. Storm water and runoff and mixed storm water and sewage shall be identified and reported separately.

(3) *Character of effluent*. The major characteristics of each such waste discharge together with a measurement of their relative strength or concentrations, including but not limited to:

BOD 5	mg/l.
Color	Platinum cobalt scale.
Turbidity	Jackson candle scale.
Solids	mg/l.
Toxic substances	----------------
Metal Ions	mg/l.
Fluorides	mg/l.
Dissolved substances	ppm.
Temperature	C.
pH	----------------
Radioactivity	Cc/l.
Chlorides	mg/l.
Nutrients	mg/l.

(4) *Present treatment*. A brief description of the type of treatment being given by each discharger, together with a statement of the degree of treatment currently being achieved.

(5) *Water quality effect*. A brief description of the effect of discharges and abatement practices upon the quality of the water in the basin, and the anticipated effectiveness of the proposed project in improving the quality of the water.

(6) *Detailed abatement program*. Identify all waste discharges for which present treatment is less than required by standards, or which will degrade water quality below standards. For each such discharger so identified, furnish an abatement schedule containing the following:

(i) Level of treatment to be required expressed in percentage of reduction of BOD and any other significant parameters required pursuant to applicable Federal, State, and interstate laws, regulations and orders.

(ii) Volume of flow for which waste treatment facilities will be designed.

(iii) Estimated completion dates for preliminary plans, for final design, for construction, and for operation of waste treatment facilities.

(iv) Estimated cost of design and construction if available.

(c) If the proposed project is not included in an effective basin-wide program for pollution abatement, and the Commissioner determines that such project will nevertheless effectively contribute to the improvement of the quality of the water in the basin, he may waive the limitation of paragraph (a) of this section. In making his determination the Commissioner may require all or a part of the information identified in paragraph (b) of this section.

(d) The Commissioner's discretion in determining the desirability of any project shall not be limited by any provision of any basin-wide abatement program pursuant to this section.

§ 601.33 Regional and metropolitan plan.

(a) A grant for a project shall not be made unless the Commissioner determines that such project is included in an effective metropolitan or regional plan developed or in the process of development, and certified by the Governor as being the official pollution abatement plan developed or in the process of development for the metropolitan area or region within which the project is proposed to be constructed.

(b) In reaching such determination the Commissioner shall consider whether such plan adequately takes into account: anticipated growth of population and economic activity with reference to time and location; present and future use and value of the waters within the planning area for water supplies, propagation of fish and wildlife, recreational purposes, agricultural, industrial and other legitimate uses; adequacy of the waste collection systems in the planning area with reference to operation, maintenance and expansion of such systems; combination or integration of waste treatment facilities into a waste treatment system so as to achieve efficiency and economy of such treatment; practicality and feasibility of treating domestic and industrial waste in a combined waste treatment facility or integrated waste treatment system; need for and capacity to deal with waste from sewers which carry storm water or both storm water and sewage or other wastes; waste discharges presently in, or anticipated for the planning area; effect of the proposed waste treatment facility upon the quality of the water within the planning area with reference to other waste discharges and to applicable water quality standards.

(c) If the proposed project is not included in an effective metropolitan or regional plan for pollution abatement, and the Commissioner determines that such project will nevertheless effectively contribute to the improvement of the quality of the water in the metropolitan

FEDERAL REGISTER, VOL. 35, NO. 62—TUESDAY, MARCH 31, 1970

FIGURE 1-2 PROPOSED NEW REGULATION

area or region, he may waive the limitation of paragraph (a) of this section. In making his determination the Commissioner may require all or a part of the information identified in paragraph (b) of this section.

(d) The Commissioner's discretion in determining the desirability of any project shall not be limited by any provision of any metropolitan or regional plan pursuant to this section.

§ 601.34 Industrial waste treatment.

(a) No grant shall be made for any project if such project is included in a waste treatment system, determined by the Commissioner to be intended to treat industrial waste, rather than the wastes of the entire community, metropolitan area, or region concerned. For purposes of this section "waste treatment system" means one or more treatment works which provide integrated waste disposal for a community, metropolitan area or region.

(b) If industrial waste is to be included in the waste treated by the proposed project, the applicant shall assure the Commissioner that such applicant will require pretreatment of industrial waste, which would if untreated be detrimental to the treatment works or its proper and efficient operation and maintenance, or will otherwise prevent the entry of such waste into the treatment plant.

(c) Where industrial wastes are to be treated by the proposed project the applicant shall assure the Commissioner that it has, or will have in effect when the project will be operated, an equitable system of cost recovery. Such system of cost recovery may include user charges, connection fees or such other techniques as may be available under State and local law. Such system shall provide for an equitable assessment of costs whereby such assessments upon dischargers of industrial wastes correspond to the cost of the waste treatment, taking into account the volume and strength of the industrial, domestic, commercial wastes and all other waste discharges treated, and techniques of treatment required. Such cost recovery system shall produce revenues, in proportion to the percentage of industrial wastes, proportionately, relative to the total waste load to be treated by the project, for the operation and maintenance of the treatment works, for the amortization of the applicant's indebtedness for the cost of such treatment works, and for such additional costs as may be necessary to assure adequate waste treatment on a continuing basis. For purposes of this section "industrial waste" shall mean the waste discharges (other than domestic sewage) of industries identified in the Standard Industrial Classification Manual, Bureau of the Budget, 1967, as amended and supplemented, under the category "Division D—Manufacturing," and such other wastes as the Commissioner deems appropriate for purposes of this section.

§ 601.35 Inspections.

No grant shall be made for any project unless the applicant assures the Commissioner that the State Water Pollution Control Agency will inspect the treatment works not less frequently than annually for the 3 years after such treatment works are constructed and periodically thereafter to determine whether such treatment works are operated and maintained in an efficient, economic and effective manner, and in accordance with such requirements as the Commissioner from time to time may publish concerning methods, techniques and practices for economic, efficient and effective operation and maintenance of treatment works.

§ 601.36 Design.

No grant shall be made for any project unless the Commissioner determines that the proposed treatment works are designed so as to achieve economy, efficiency and effectiveness in improving the quality of the water into which such treatment works will discharge; and that the applicant will meet such requirements as the Commissioner may publish from time to time concerning treatment works design so as to achieve efficiency, economy and effectiveness in waste treatment.

§ 601.25 [Amended]

Subpart B would be further amended by adding to subsection (c) of § 601.25 a new subparagraph (3) as follows:

(3) Such project is included in a basin-wide program for pollution control in accordance with § 601.32, and such project is included in a metropolitan or regional plan for pollution abatement in accordance with § 601.33 of this Subpart.

Subpart B would be further amended by renumbering the existing subparagraph (3) of § 601.25(c) as subparagraph (4); and by changing the reference to subparagraph (3) in the proviso following such subparagraph (3) to subparagraph (4).

Dated: March 24, 1970.

WALTER J. HICKEL,
Secretary of the Interior.

[F.R. Doc. 70-3812; Filed, Mar. 30, 1970; 8:47 a.m.]

FIGURE 1-2 CONTINUED

APPENDIX 2

PLANNING

		Page
1.0	TYPES OF PLANNING	41
2.0	STATUS OF PLANNING	43
3.0	UTILITY OF EXISTING PLANNING	51
4.0	PROGRAM MANAGEMENT FOR BASIN PLANNING	53
5.0	RECOMMENDATIONS	59

APPENDIX 2
PLANNING

1.0 TYPES OF WATER QUALITY PLANNING

FWQA participates financially and technically in water quality planning. A great deal of water-related planning takes place, particularly at local levels, with no FWQA participation. Following is a summary of the types of water quality-related planning performed by various agencies at all levels of government.

FWQA Planning Activities

- Section 3(a) Studies. Direct FWQA technical and financial participation, in cooperation with other federal, state, interstate or municipal agencies or industrial organizations in planning for the reduction of pollution in interstate waters or improvement of sanitary conditions of surface or subsurface waters.

- Section 3(b) Studies. Direct FWQA technical and financial participation in studying the water quality control aspects of dams or other water storage and regulation facilities planned by federal agencies.

- Section 3(c) Planning Grants. FWQA subsidy to states, interstate agencies, municipal agencies, regional authorities, etc., for developing water quality control and abatement basin plans.

- Section 7 State Planning Grants. FWQA financial subsidy to states and interstate agencies for a part of the administrative expense of developing State Program Plans and related planning functions.

- Section 8 Preliminary Planning. FWQA financial participation in the development of preliminary engineering and economic feasibility plans for facilities to be developed under the Construction Grants Program. (Section 8 of PL 660, as interpreted in Paragraphs 21-22 of the Construction Grants Program "Handbook of Procedures," January 1968.)

Preceding page blank

Water Resources Council Studies

Financial participation in studies and planning administered under the Federal Water Resources Council and conducted by a basin commission. These are of four general types:

- Type 1 Framework Studies, which are broad, general studies of a major river basin or drainage area.
- Type 2 Coordinated Comprehensive Detailed Studies, which are more detailed studies of smaller river basins or drainage areas.
- Type 3 Feasibility Grade or Survey Scope Studies, which are of narrower geographic or analytic compass than Type 1 or 2 studies. They are undertaken by a single agency for project or program authorization, with cooperation, as necessary, of other federal agencies and states.
- Type 4 State or Local Sponsored Surveys, which are of water and related land resources for all or a part of a State in which one or more federal agencies are participating.

FWQA participates in such studies by use of manpower resources or "213" funds.

Water Quality Planning without FWQA Participation

Planning which directly or indirectly involves water quality considerations is performed by numerous organizations without any form of FWQA participation (although the fact that such planning has occurred may make some applications for facility construction grants eligible for a 10 percent bonus). These studies are generally of two types:

- Metropolitan Area Planning Studies. Local governments (cities, counties, etc.) and associations of local governments (COG's regional planning commissions, special districts, etc.) conduct comprehensive studies for their respective jurisdictions; these usually include water and sewer planning. Although often subsidized by HUD, such planning studies may be conducted solely under local and/or state financing.

- Rural Area Planning Studies. Comprehensive planning for rural areas, including water and sewer plans, are generally developed on a county basis. These are often subsidized by Farmers Home Administration, but may be financed solely by the county of state.

2.0 STATUS OF PLANNING

Section 3(a) Studies

To date there are 24 Water Quality Management Planning studies underway and 7 completed. These are in-house studies which provide a gross water quality picture and do not approach the requirements of the proposed new FWQA regulations (See Figure 1-2).* Table 2-1 shows the twenty-four 3(a) studies underway by region. Table 2-2 gives the titles of reports from the seven completed studies.

Section 3(b) Studies

Because of the limited scope of 3(b) studies (pertaining to Federally planned dams and other flow regulating facilities) and their minimal impact on the Construction Grants Program, the status of these studies was not reviewed during this present study.

Section 3(c) Grants

At present there are 12 comprehensive basin planning grants (3c) underway. These constitute the first group funded under Section 3(c). The first two plans will be completed this fiscal year. These are for the Milwaukee River and the Upper Trinity River. These plans are expected to contain sufficiently detailed information needed for implementation.

Although the grants made under Section 3(c) approximate 50% of the eligible costs claimed by the applicant, the latter are not necessarily equal to the costs of the planning project. This seeming anomaly is due to the fact that portions of the planning activity may be supported by other Federal assistance programs (HUD, EDA, FHA). In such cases, benefits are derived by more than one functional program. Therefore, the theoretical costs of a water quality planning program would have to be pro-rated from the costs of all other coincident planning programs.

A list of the twelve 3(c) grants and the respective grantees is shown in Table 2-3.

---

*Figure 1-2 is in Appendix 1.

TABLE 2-1
STATUS OF 3(a) STUDIES NOW IN PROGRESS

REGION AND RIVER	STATUS (Completion Date)	COST*
Northeast		
(1) Charles River (Type 3)	June 1971	
(2) S.E. New England	See Table 2-5	
(3) Connecticut River	See Table 2-5	
(4) Passaic River**		
(5) Raritan River	FY-1971	
(6) Delaware Estuary	FY-1971	
Middle Atlantic		
(7) Susequehanna River	FY-1971	
(8) Potomac River	In support of Enforcement Conference No Planning Report	
(9) Patuxent River	FY-1971	
(10) James River (Type 3)	June 1971	
Southeast		
(11) South-Alcovy-Yellow	October 1970	
(12) Flint River	April 1971	
(13) Black Warrior	April 1971	
(14) Tombigee River		

---

* Most of the 3(a) studies published or underway were initiated or completed under the Comprehensive Program concept, and costs were not accounted for by river basins.

**This entry was deleted from Table.

TABLE 2-1 CONTINUED

REGION AND RIVER	STATUS (Completion Date)	COST
Southeast-(Cont'd.)		
(15) Pascagoula River	January 1971	
(16) French Broad River	December 1970	
(17) Holston River	May 1971	
Ohio		
(18) Kanawha - New River	FY-1971	
(19) Wabash River	FY-1971	
Great Lakes		
(20) Oswego	August 1970	
(21) Black St. Lawrence	December 1970	
(22) Genesee	October 1970	
(23) Lake Huron	FY-1971	
Southwest		
(24) Klamath River	FY-1971	

TABLE 2-2
COMPLETED 3(a) STUDIES

TITLE AND DATE	COST*
(1) Water Quality Control and Management - Snake River Basin Published: NW Region - September 1968.	
(2) Water Quality Control and Management - Willamette River Basin Published: NW Region - January 1967.	
(3) Delaware Estuary Comprehensive Study - Preliminary Report and Findings Published: NE Region - July 1966.	
(4) Water Pollution Problems and Improvement Needs - Lake Ontario and St. Lawrence River Basins Published: Great Lakes Region - June 1968.	
(5) Lake Erie Report - A Plan for Water Pollution Control Published: Great Lakes Region - August 1968.	
(6) An Appraisal of Water Pollution in the Lake Superior Basin Published: (Enforcement Report) Great Lakes Region, April 1969.	
(7) Water Pollution Problems of Lake Michigan and Tributaries Published: (Enforcement Report) Great Lakes Region, January 1968, Revised June 1968.	

---

*See footnote on Table 2-1.

TABLE 2-3
LISTING OF 3(c) GRANTS

TITLE AND GRANTS	ESTIMATED COMPLETION DATE	FWQA GRANT $000
(1) Baltimore Harbor Maryland Department of Water Resources	February 1972	303
(2) Oklawaha River Basin East Central Florida Regional Planning Council	February 1973	117
(3) Great Miami River Ohio Department of Natural Resources	December 1971	532
(4) Milwaukee River Southeastern Wisconsin Regional Planning Council	November 1970	100
(5) Omaha-Council Bluffs Omaha-Council Bluffs Metro Area Planning Agency	September 1972	181
(6) Upper Trinity River Basin North Central Texas Regional Planning Commission	December 1970	273
(7) Las Vega Wash, Nevada Clark County Board of Commissioners	November 1971	87
(8) Lane County, Oregon Central Lane Planning Council	March 1972	161
(9) Humboldt Bay, California Humboldt County Board of Supervisors	April 1971	39
(10) San Francisco-Bay Delta, California California State Water Resources Control Board	May 1971	398
(11) Santa Ana Watershed, California Santa Ana Watershed Planning Agency	November 1971	273
(12) Commonwealth of Puerto Rico Puerto Rico Planning Board	March 1972	220

State Program Plans

All states have developed State Program Plans for FY 1970 and with one or two exceptions, all have been approved by FWQA. At present, none of the State Program Plans contains the detailed basin-by-basin water quality plans contemplated by proposed new regulations (Paragraph 601.32 of Subpart B to Federal Regulation Part 601 -- See Figure 1-1 in Appendix 1).

Because of the general absence of planning details in the State Program Plans, they must be regarded as in the nature of programmed activities or milestones, and not as water quality plans which should include statements of needs, methods of meeting needs, assessment of alternative methods and selection of a preferred method, milestone schedules, and resource requirements.

Section 8 Preliminary Planning for Construction Grants

This type of planning is commonly restricted to economic and engineering feasibility studies for specific facilities. It therefore is not generally of sufficiently broad scope to qualify as water quality planning, which is understood to include the elements mentioned in the preceding paragraph.

Water Resources Council Studies

- Type 1 Framework Studies (Comprehensive Surveys). Type 1 Framework Studies are administered by the Water Resources Council and are partially funded by the planning monies of FWQA. These studies are merely comprehensive surveys and do not represent any type of plan. There have been 12 Type 1 studies started and to date only one of these is completed -- Ohio. The twelve Type 1 studies are shown in Table 2-4.

- Type 2 Coordinated Comprehensive Detailed Surveys. The Type 2 coordinated comprehensive detailed surveys are administered by the Water Resources Council and partially funded by FWQA. These studies very closely approach the requirements for a comprehensive river basin plan as called for in the above discussion of State Program Plans, and with small change could meet these requirements. There have been 15 Type 2 studies funded and to date 5 have been completed. The 15 studies are shown with costs and estimated completion dates are in Table 2-5.

TABLE 2-4
WATER RESOURCE COUNCIL TYPE 1 STUDIES

RIVER AND AREA	ESTIMATED COMPLETION DATE	COST* $000
(1) California	June 1971	367
(2) Columbia North Pacific	June 1970 (Extension Requested)	417
(3) Great Basin	June 1971	143
(4) Great Lakes	June 1972	98
(5) Lower Colorado	June 1971	160
(6) Lower Mississippi	April 1973	270
(7) Missouri	June 1970 (But Slipping)	304
(8) North Atlantic	April 1971	981
(9) Souris-Red	June 1970	124
(10) Ohio	Completed	506
(11) Upper Colorado	June 1971	169
(12) Upper Mississippi	October 1970	332

---

*Includes costs incurred by PHS prior to establishment of FWQA.

TABLE 2-5
WATER RESOURCE COUNCIL TYPE 2 STUDIES

RIVER AND AREA	ESTIMATED COMPLETION DATE	COST* $000
(1) Big Black (Miss.)	Completed	14
(2) Big Muddy (Ill.)	June 1971	23
(3) Connecticut (N.H., Vt., Mass., Conn., R.I.)	June 1970	61
(4) Genesee (N.Y.)	May 1970	20
(5) Grand (Mich.)	September 1970	45
(6) Kanawha (W.Va., Va., N.C.)	June 1970	82
(7) Pascagaula (Miss.)	Completed	20
(8) Pearl (Miss.)	September 1970	43
(9) Puget Sound (Wash.)	June 1970	21
(10) Red (La., Tex., Ark., Okla.)	Completed	35
(11) Sabine (Tex., La.)	Completed	46
(12) Susquehanna (N.Y., Pa., Md.)	June 1970	181
(13) Wabash (Ill., Ind.)	June 1970	162
(14) White (Ark., Mo.)	Completed	46
(15) Willamette (Oregon)	June 1970	106

Water Quality Planning Studies Conducted with No FWQA Participation

No inventory exists within FWQA, either at Headquarters or in the Regional Office, for the planning studies relating to water quality which have proceeded without FWQA participation. One region has provided the Study Team with a listing of agencies within that region that perform local planning functions. Recently the Basin Planning Branch within the Operations Office at FWQA Headquarters undertook an inventory of all planning agencies working on water quality plans and the status of their efforts. The results are not available at this time.

3.0 UTILITY OF EXISTING PLANNING

There is substantial question whether the water quality planning that has been completed or currently in progress is relevant and useful to the Construction Grants Program. Two levels of "usefulness" are recognized by the study team. The first, and less stringent, is whether the plan provides sufficient information to enable an FWQA reviewer of a CG application to determine whether the application is in conformance with the plan, or is in conformance with a comprehensive river basin plan of which the plan under discussion is a part. The second level is whether the plan is sufficiently detailed and firm to permit implementation by a series of Construction Grant projects.

Of the completed studies or plans listed in the preceding section (seven 3(a) studies, one Type 1 study, and five Type 2 surveys), the answer must be negative. The products of these studies are much too general and vague to permit determination of whether a given application conforms or does not conform; they were not intended to provide the level of specification required. Even less are they capable of being implemented by Construction Grant activities to achieve defined standards of water quality.

At the other end of the spectrum of detail are the local area plans -- generally water and sewer plans -- which are prepared without FWQA participation. These usually contain a high level of detail and are eminently well suited for implementation by one or more Construction Grant projects, they are generally specific to a particular local situation and bear very little relation to a comprehensive river basin plan. In fact, they sometimes bear little relation to the plan for an adjacent locality. While such local or metropolitan area plans may be nearly optimal for the locality, they may be poorly related to the overall basin plan for achieving water quality and poorly suited to achieving regionalization of treatment facilities.

In an effort to promote better river basin planning, regional and metropolitan area planning, and coordination of these types of planning with construction grants, FWQA has recently issued a set of proposed new regulations pertaining to construction grants (Federal Register, March 31, 1970). These regulations identify specific planning-type data needed for determining conformance to basin-wide or metropolitan area plans for pollution abatement.

Of the various types of plans completed to date, none satisfies the information required by the proposed regulations, although these requirements are, in the opinion of the study team, minimal. However, another type of planning, that conducted under Section 3(c) appears to provide the information required by the proposed regulations. This observation is based on the study team's review of an incomplete plan for a multi-county region, which will, on completion, provide the data needed for implementation. To date none of the 3(c) planning efforts has been completed, but two are scheduled for completion during the current calendar year.

In summary, none of the currently developed plans at any level -- from large river basin to locality -- appears useful for purposes of evaluating Construction Grant applications and their impact on achieving water quality goals. The large scale plans do not provide sufficient detail to be implementable, while the small-scale, local-area plans do not fit together into an integrated basin plan. The only plans that hold promise of providing sufficient information for CG use are those currently being developed under Section 3(c).

4.0 SYSTEMS PROGRAM MANAGEMENT FOR BASIN PLANNING

In order to obtain useable river basin plans FWQA should adopt a systematic approach to acquiring each plan. This approach should be used at the region level by establishment of a systems program office for basin planning. Described below is an outline for a system management approach for any river basin.

4.1 System Description

A program for system management must recognize the natural order of actions during the life cycle of a system. Basin planning must be first conceptualized. During the "conceptual phase," the idea and requirement for basin planning is born. It must then be defined. During the definition phase, it is determined that all elements of planning and construction fit together. The planning must then be developed. This is the acquisition phase during which detailed design and development of plans take place. It must then be delivered and put in use. This is the operational phase during which the plans are implemented. An example of a gross functional flow for a system program management on planning is shown in Figure 2-1. The specific objectives of using system program management is to:

(1) Insure effective management of the definition, development, and implementation of the planning.

(2) Minimize technical, economical, and schedule risks during the development of plans.

(3) Control changes to system requirements during development.

(4) Establish a high probability of success in obtaining a timely, economical, and suitable plan.

(5) Identify the significant actions to be accomplished by all organizations, e.g., states, communities, planning commissions, etc., participating in the system management planning.

The following tasks should be accomplished in the given order cited for the definition phase:

(1) Diagram of definition of plan

(2) Determination of functional requirements

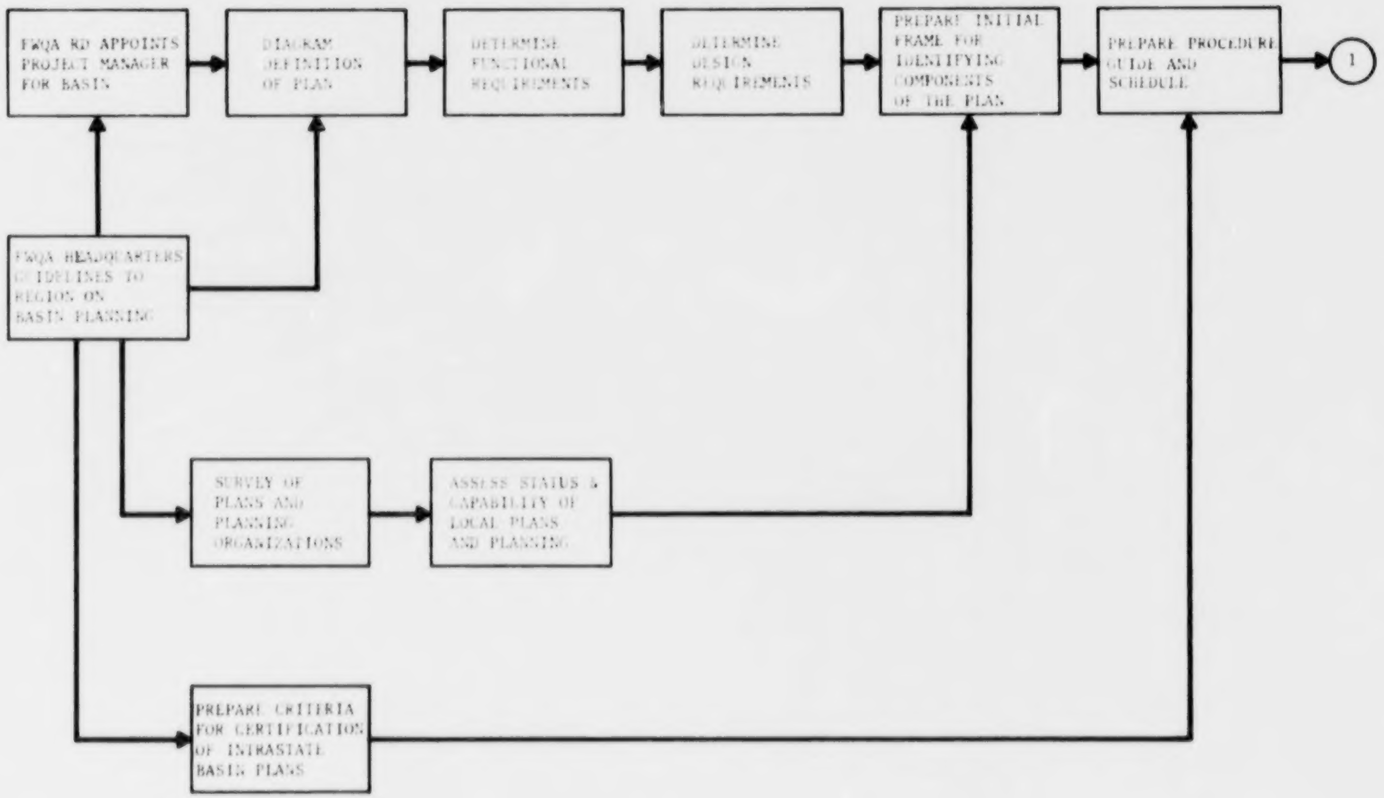

FWQA RD APPOINTS PROJECT MANAGER FOR BASIN
DIAGRAM DEFINITION OF PLAN
DETERMINE FUNCTIONAL REQUIREMENTS
DETERMINE DESIGN REQUIREMENTS
PREPARE INITIAL FRAME FOR IDENTIFYING COMPONENTS OF THE PLAN
PREPARE PROCEDURE GUIDE AND SCHEDULE
1
FWQA HEADQUARTERS GUIDELINES TO REGION ON BASIN PLANNING
SURVEY OF PLANS AND PLANNING ORGANIZATIONS
ASSESS STATUS & CAPABILITY OF LOCAL PLANS AND PLANNING
PREPARE CRITERIA FOR CERTIFICATION OF INTRASTATE BASIN PLANS

FIGURE 2-1a
SYSTEMS PROGRAM MANAGEMENT FOR BASIN PLANNING (FUNCTIONAL FLOW)

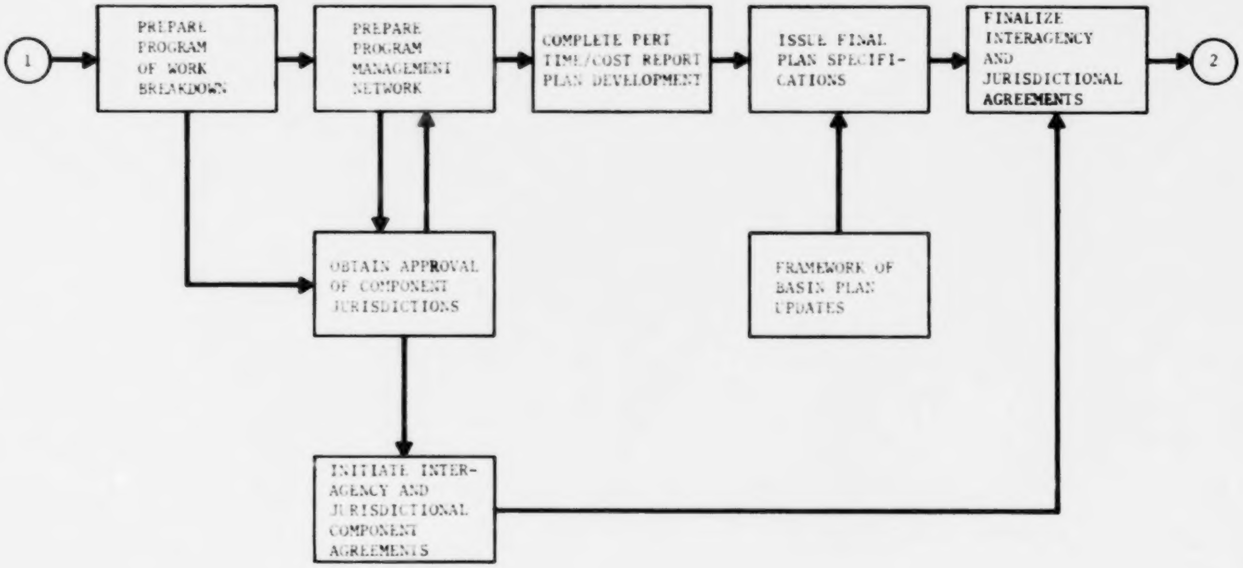
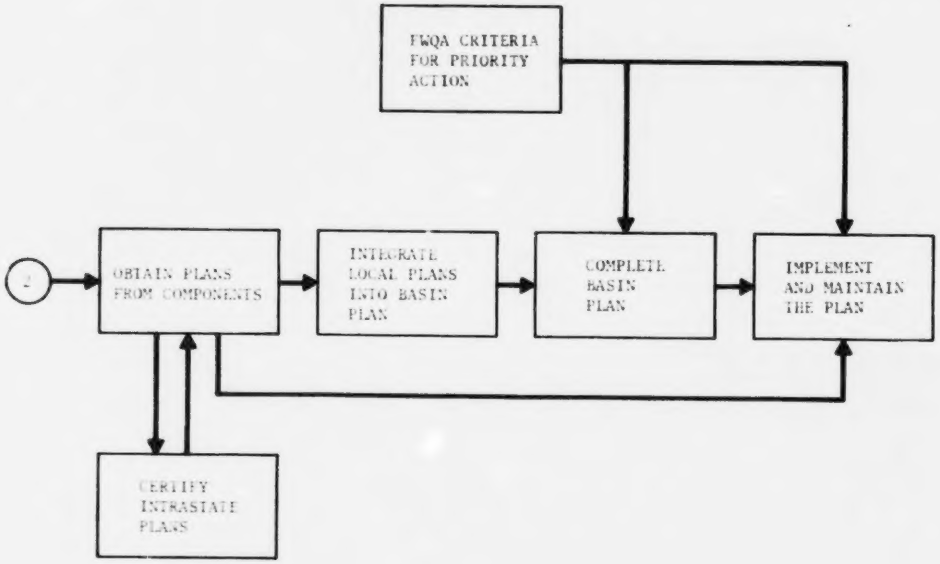

1
PREPARE PROGRAM OF WORK BREAKDOWN
PREPARE PROGRAM MANAGEMENT NETWORK
COMPLETE PERT TIME/COST REPORT PLAN DEVELOPMENT
ISSUE FINAL PLAN SPECIFICATIONS
FINALIZE INTERAGENCY AND JURISDICTIONAL AGREEMENTS
2
OBTAIN APPROVAL OF COMPONENT JURISDICTIONS
FRAMEWORK OF BASIN PLAN UPDATES
INITIATE INTER-AGENCY AND JURISDICTIONAL COMPONENT AGREEMENTS

FIGURE 2-1b
SYSTEMS PROGRAM MANAGEMENT FOR BASIN PLANNING (FUNCTIONAL FLOW)
CONTINUED



2
OBTAIN PLANS FROM COMPONENTS
INTEGRATE LOCAL PLANS INTO BASIN PLAN
COMPLETE BASIN PLAN
IMPLEMENT AND MAINTAIN THE PLAN
FWQA CRITERIA FOR PRIORITY ACTION
CERTIFY INTRASTATE PLANS

FIGURE 2-1c
SYSTEMS PROGRAM MANAGEMENT FOR BASIN PLANNING (FUNCTIONAL FLOW)
CONCLUDED

(3) Determination of design requirements

(4) Preparation of initial frame for identifying components of the plan

(5) Preparation of procedures and schedules

(6) Preparation of a program work breakdown structure

(7) Preparation of program management network

(8) Approval of component jurisdictions involved in developing the plan

(9) Complete final PERT time/cost report for plan development

(10) Issue a plan specification.

4.2 Acquisition Phase

The fundamental purpose of the acquisition phase is to acquire the developed plan required to satisfy the plan specification. The principal product of the acquisition phase is the acceptance of the component elements to form the total plan. During this phase interagency agreements must be activated. Interagency agreements will include the following:

(1) Identification of the plan's program documentation that will be used to assure that all agencies are kept informed concerning the program status.

(2) Identification of the role of agencies including details on the functional and physical interface, support, and other technical relationships to the total program.

(3) Identification of specifications and constraints specifically applicable to the agency.

(4) Allocation of design and design-review responsibilities between the agencies and procedures by which mutual satisfaction of interface designs can be reached.

(5) Identification of the specific actions, decisions, data, manpower, facilities, and support which the agencies will perform and provide in order that the acquisition phase may be successfully completed.

The final product of this phase is the FWQA approved plan.

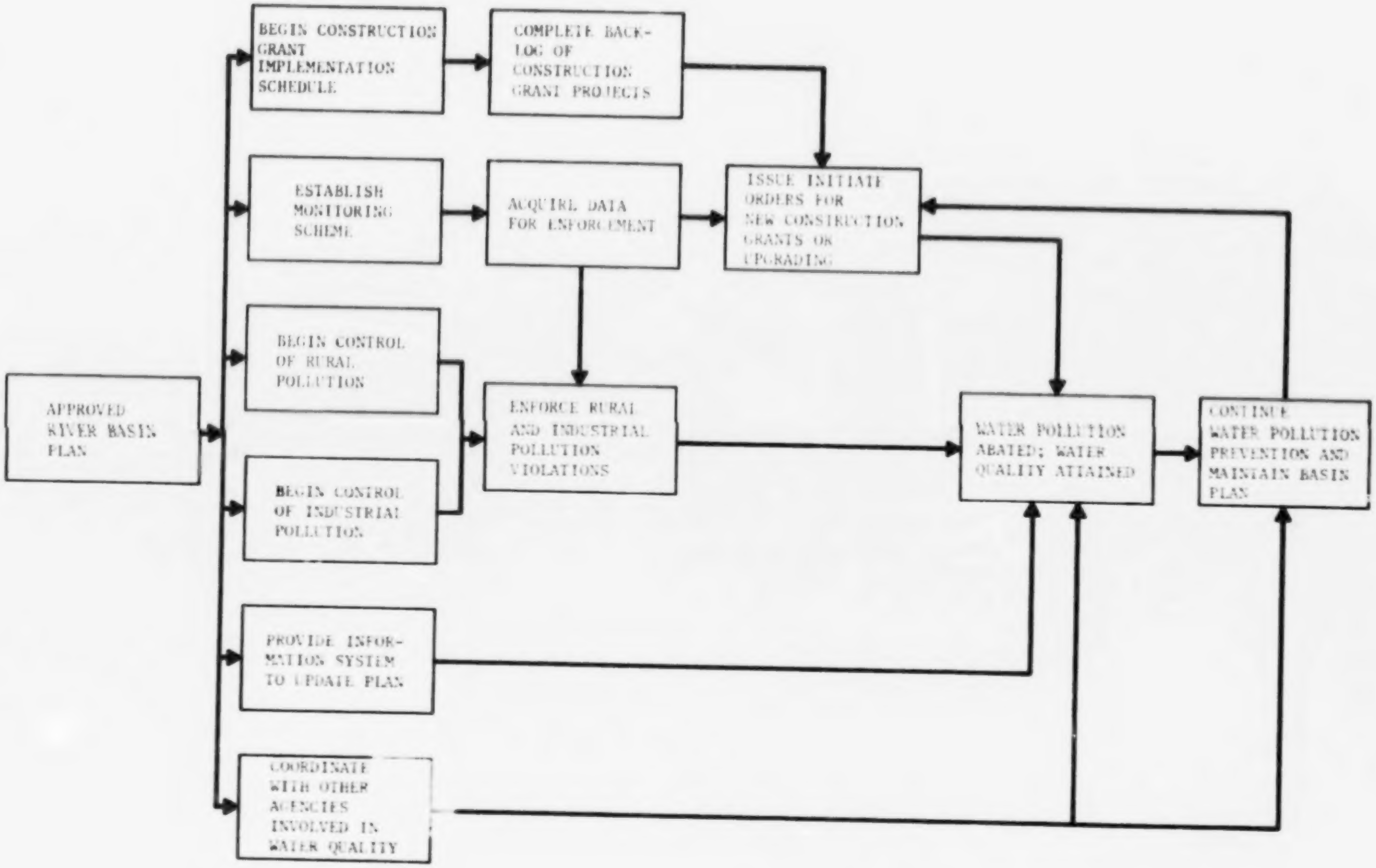

BEGIN CONSTRUCTION GRANT IMPLEMENTATION SCHEDULE
COMPLETE BACK-LOG OF CONSTRUCTION GRANT PROJECTS
ESTABLISH MONITORING SCHEME
ACQUIRE DATA FOR ENFORCEMENT
ISSUE INITIATE ORDERS FOR NEW CONSTRUCTION GRANTS OR UPGRADING
BEGIN CONTROL OF RURAL POLLUTION
APPROVED RIVER BASIN PLAN
ENFORCE RURAL AND INDUSTRIAL POLLUTION VIOLATIONS
WATER POLLUTION ABATED; WATER QUALITY ATTAINED
CONTINUE WATER POLLUTION PREVENTION AND MAINTAIN BASIN PLAN
BEGIN CONTROL OF INDUSTRIAL POLLUTION
PROVIDE INFORMATION SYSTEM TO UPDATE PLAN
COORDINATE WITH OTHER AGENCIES INVOLVED IN WATER QUALITY

FIGURE 2–2
OUTLINE FLOW OF OPERATIONAL PHASE OF A RIVER BASIN PLAN

4.3 Operational Phase

The fundamental role during the operational phase is the implementation and maintenance of the plan. The operational phase is intended to achieve the following objectives:

(1) Transfer of an implementable plan to the implementing agencies.

(2) Transfer of responsibility from Planning to Construction Grants and Enforcement.

(3) Continued plan maintenance.

(4) Accomplishment of water pollution control.

An outline flow of an operational phase is shown in Figure 2-2.

5.0 RECOMMENDATIONS TO IMPROVE FWQA'S PLANNING AND SUBSEQUENT IMPLEMENTATION

A number of recommendations, some general, some specific, are made relative to FWQA's activities in planning for water quality. Many of the specific recommendations fit logically within the framework of the more general recommendations, and are presented in this way in the following paragraphs.

5.1 Develop an FWQA National Plan to Achieve Water Quality

Problem: FWQA was created by the Federal Water Pollution Control Act as the Federal implementation agency to accomplish the purposes of the act, namely, "...to enhance the quality and value of our water resources, and to establish national policy for the prevention, control and abatement of water pollution."

The act provides general guidance for accomplishing these purposes by (1) defining the rights, responsibilities and limitations of authority of FWQA (as the implementation area of the Secretary), of the states, and of other federal agencies; (2) declaring certain policies of Congress relative to the administration of the act; and (3) describing certain procedures to be employed in administering the act. The legislation does not, and should not, define a detailed procedure for accomplishing the stated purposes.

There is a clear and urgent need for such a procedure which is comprehensive in scope and detailed in content, which defines goals and assigns responsibilities, and which schedules actions for reaching the goals, if FWQA is to accomplish its mission stated--the enhancement of water quality and the establishment of national policy for water pollution control--within the foreseeable future. A procedure of this nature can aptly be termed a National Plan to Achieve Water Quality Goals.

No such procedure exists.

Recommendation: FWQA should develop a national-level plan that will lead quickly to the formulation of implementable schedules for action for each major and minor river basin in the nation.

The plan should contain the following elements:*

(1) Statement of goals and policies

(2) Schedule, responsibility assignments, and milestones to reach water quality goals, through:

(a) planning
(b) new technology
(c) implementation

(3) Criteria for effective focusing of resources, and assessing and presenting program status

(4) Implementable, comprehensive plans for all water basins

(a) initial "top-down" FWQA plans as guidance
(b) certified state and water basin commission plans

(5) Coordination of all types of environmental pollution abatement and utilization of natural and other resources

(6) System for monitoring progress to assure timely implementation.

---

*With the exception of Item 5, these elements are discussed in detail elsewhere in this report. All except 2b, 3, and 5 are covered in the present section on planning. Items 2b and 3 are covered by Appendices 3 and 5. Although Item 5 is exceedingly important, a detailed discussion is not appropriate to the present report.

Although a plan of this nature is necessary, it is not of itself sufficient to achieve the goals of water quality. Two additional elements are essential:

(1) A firm commitment to take the necessary actions to implement the plan.

(2) Adequate financing.

The matter of financing is discussed at length in Appendix 5, but the equally important matter of FWQA assuming the responsibility for cleaning up the nation's waters leads to the following recommendation:

Corollary Recommendation: FWQA management should make known its resolve to take whatever initiative is necessary to insure that implementable, comprehensive plans are quickly developed for each river basin, and that these plans are expeditiously implemented.

Rationale: FWQA has traditionally operated in a reaction mode. Someone else--a state water pollution agency, an applicant, etc.--takes an action, and FWQA reviews, approves, and issues funds. The initiative lies largely with the other agency. Although there are some exceptions, this is the general mode of operation. But it is neither an efficient nor an expeditious way of getting the job done. It should be immediately and unequivocally be abandoned in favor of an aggressive leadership role by FWQA, which should involve direct participation by FWQA in planning and, in certain cases, in the implementation of water quality plans.

In developing the national-level plan, FWQA would of course not have to perform all of the work needed for developing the various river basin schedules of actions. Instead, it should stimulate planning activities by municipalities, regional agencies, states, basin commissions, etc., and should provide guidance for these activities (the "bottom-up" approach). Further, it should provide coordination for the results of planning by these various organizations to form implementable courses of action for achieving defined water quality standards in each basin. But where such approaches failed to produce the needed results, FWQA should be prepared to perform the necessary planning work and, in case of default by designated implementation agencies, to be the prime mover in implementation actions. In any event, FWQA should develop the National Plan in broad outline, including statements of federal policy, criteria, and specification of the information of content of local and state plans (the "top-down" approach).

The national-level plan is viewed as a framework into which component plans (for localities, states, minor basins, etc.) may be fitted and integrated to form cohesive, implementable plans (action schedules) for each river basin.

FWQA would have to perform the following specific functions in order to complete a useful and viable national plan:

- To state Federal policy
- To create the framework for an overall, nationwide plan, and generate criteria for river basin and other component plans
- To stimulate planning at all levels
- To guide planning at all levels
- To coordinate the results of planning to form implementable courses of action for preventing/abating pollution in each river basin
- To monitor planning and maintain schedules of accomplishment.

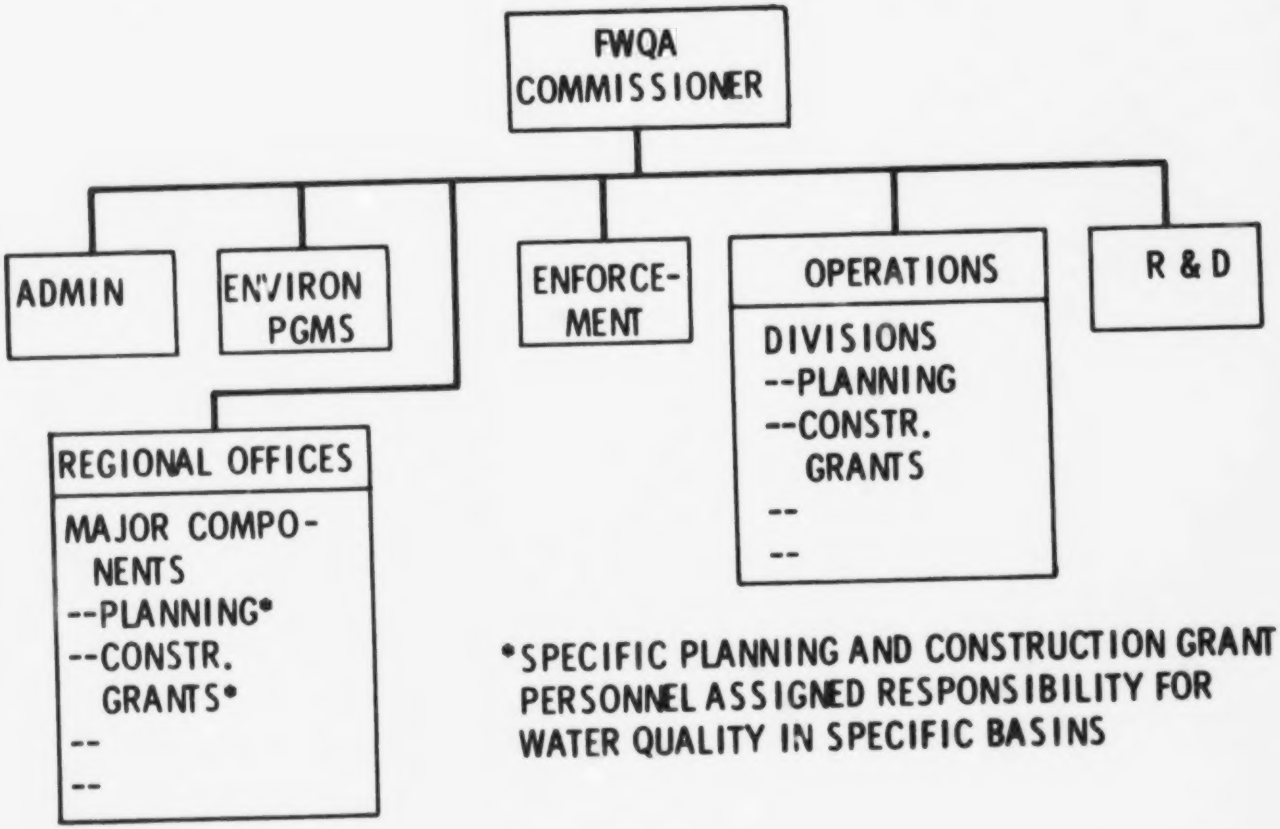
These functions will be discussed as separate recommendations, but it should be remembered that all of them must be part of an overall national level plan.

5.2 Organizational Restructuring and Assignment of Responsibility

5.2.1 Consolidate all FWQA Planning Functions

Problem - In the present FWQA Headquarters organizational structure, major planning activities are performed by separate offices (Basin Planning Branch of the State and Local Programs Division, and State Programs Office of the Division of Planning and Interagency Programs). A similar separation of functions exists in Regional offices. This structure is not conducive to developing a strong planning organization as needed to formulate a consistent, coherent national level plan, and to oversee its implementation.

Recommendation: Consolidate all planning functions into a division-level planning office within the Office of Operations at FWQA Headquarters, and perform a similar consolidation at each Regional Office to combine all regional planning functions into a major organizational component. See Organizational Chart, Figure 2-3.


FWQA
COMMISSIONER
ADMIN
ENVIRON
PGMS
ENFORCE-
MENT
OPERATIONS
DIVISIONS
--PLANNING
--CONSTR.
GRANTS
--
--
R & D
REGIONAL OFFICES
MAJOR COMPO-
NENTS
--PLANNING*
--CONSTR.
GRANTS*
--
--

*SPECIFIC PLANNING AND CONSTRUCTION GRANT PERSONNEL ASSIGNED RESPONSIBILITY FOR WATER QUALITY IN SPECIFIC BASINS

FIGURE 2-3
RECOMMENDED ORGANIZATION

Implementation Action Required - Directive from the Commissioner, after coordination with Assistant Commissioner for Operations.

Impact on Achievement of Water Quality Goals - Promotes formation of a stronger organization to integrate all planning activities. Permits assignment of responsibility to specific individuals for developing adequate basin plans within each region and at Headquarters, and ultimately(beginning FY 1972)permits assignment of responsibility for implementing such plans.

(Note: The following discussions are based on the assumption that a consolidated planning office exists at Headquarters and in each region. It will be referred to as "Planning Office.")

5.2.2 Upgrade Status of Construction Grants Program

Problem: Construction Grants Program, the major grantor of federal funds within FWQA and becoming larger with new emphasis on water quality, is three levels below the commissioner. Its budgets within Regional Offices are mixed with other programs. Its assignment of responsibilities is diffused and not clearly defined.

Recommendation: Restructure the organization of the construction grants operation both in Washington and in the regions, to accomplish the following purposes:

- To upgrade the organizational status of Construction Grant Program Office.
- To provide firmer assignment of responsibilities, both at Headquarters and in regions.
- To provide separate and clearly identifiable budgets within FWQA.

Implementation Action Required:

- Directive from Commissioner to revise original structure.
- FWQA OMA develop revised organizational structure within Construction Grants Headquarters office and Regional offices.
- Obtain concurrence of Assistant Commissioner for Operations.
- Directive from Commissioner to implement re-organization.

5.3 FWQA Should Issue Statements of Federal Policy Pertaining to Water Pollution Control

Federal level policy on all major aspects of FWQA activities--R&D, enforcement, construction, surveillance, planning, etc.--should be enunciated by FWQA Headquarters. The present discussion will be directed towards those policies pertaining to planning and Construction Grants.

5.3.1 Definition of Planning Responsibilities

A major need for a policy statement is for clarification of responsibilities for planning and subsequent implementation. This statement should clarify the relation between planning functions administered or sponsored by the Water Resources Council, HUD, Department of Agriculture, FWQA, and other bureaus within Interior.

In its policy statement on planning responsibility, FWQA should assume responsibility of formulating overall water quality plans for all major basins, utilizing smaller-area plans developed by localities, states, etc. These small-area plans would then be integrated to the extent necessary by FWQA. To be integrable, the component plans must contain certain elements of information. FWQA should therefore define the minimal information content of local plans, state plans, etc., pertaining to water quality. (See Section 5.5 on "Guidance" for additional discussion of content of plans).

5.3.2 Definition of Interceptor Sewers

Another needed policy statement is for clarification of FWQA's position on a definition of interceptor sewers. Interceptors constitute a major cost element in FWQA's construction grants program. In some areas, the investment in interceptors exceeds that of treatment plants. Yet FWQA has scrupulously avoided defining what is specifically covered by the term "interceptor sewers," in order to permit flexibility and latitude in deciding whether particular projects were eligible for grants under the non-existent definition of interceptors. As a result, state agencies have developed their own definitions or policies, explicitly from one state to another.

Irrespective of whether FWQA wishes to issue its own nation-wide definition of interceptors, it should take a policy stand regarding such a definition. If it decides against a nation-wide definition, it should acknowledge that the perogative of defining interceptors resides with the states, the regional offices, with

HUD, or with some other specific agency. Such a policy statement would tend to relieve much of the uncertainty, ambiguity, and alleged inequity that now exists for want of a definition.

The subject of interceptor sewers is discussed further in Section 6.

5.3.3 Retention of Storm Water for Subsequent Treatment

FWQA should develop policy statements or guidelines as to the eligibility of facilities for retaining storm water loads from combined sewer systems for subsequent treatment, rather than bypass the treatment plants during peak loadings.

5.3.4 Intrusion of Ground Water into Old, Leaking Sewer Systems

FWQA should develop policy relating to the use of construction grant funds for treatment plants which must be designed oversized (sometimes by a factor of 3 or 4) because the load of sewage to be treated is increased greatly by intrusion of groundwater into the sewer system. There is a major cost trade-off between the construction of such oversized plants and repair or replacement of the defective sewers that should be made before funds are granted for plant construction.

5.4 FWQA Stimulation of State and Local Planning

Problem - Although a large number and variety of planning agencies exist, not all areas of the regions are covered. Some planning groups are competent, some are not. Competent, elaborate, and expensive planning is sometimes rejected, presumably because communities concerned were not brought into the effort early and had no effective input or impact on the plan. Despite the need for additional planning, adequate funds for this purpose are not available.

Recommendation - Promote complete coverage of all portions of each region by well-made local or multi-county plans. Working through state WPC agencies, encourage the continuation of competent existing groups, strengthening of weaker groups, and development of similar local groups in areas not covered.

Corollary Recommendation - Provide additional Federal funds for state and local planning (perhaps by additional Congressional appropriations or by including such planning under "feasibility studies" under Construction Grants).

Implementation Action Required

- Identify gaps in existing planning. This requires an inventory of all existing plans relating to water quality, as well as plans under development plus schedule for their completion, and an assessment of adequacy of each. The areas where additional planning is needed can then be identified; this need may be for total, ground-up planning, or supplemental work on existing plans.

  This action should be performed by the consolidated planning office, FWQA Headquarters, in close liaison with Regional offices.

- Identify organizations capable of performing the needed planning functions and assess their competency and their authority to implement the plans. This action requires a knowledge of existing planning organizations and their capabilities. Since it requires detailed knowledge of local groups, it could best be performed by FWQA Regional Offices, working in conjunction with state agencies.

- Designate a local or regional planning group to be responsible for developing plans for all areas where planning is needed, or for augmenting existing plans as required.

  This action is to assure that some competent planning group is responsible for all areas where planning is needed. In general, it will be the official city or regional planning authority, but may require formation of a new group (a state or local responsibility). The responsible group may in some cases be the state WPC agency itself. To be effective, this action must be accompanied by the offer of partial federal subsidy for the planning effort.

  This action could best be performed by the Planning Office within the Regional Offices, with the assistance and concurrence of state agencies.

- Obtain Solicitor's opinion as to whether "...and other action necessary to the construction of treatment works..." may be interpreted to include state and local planning action (quotation from Section 8 of PL 660).

  If this step is permissible, then the required funds can be applied to planning by directive of the Commissioner.

If not, then legislative action is required, since existing funding levels for planning are not adequate.

Rationale: There are a number of substantial reasons why FWQA must rely upon municipalities, states, special districts, etc., to develop plans for achieving water quality, rather than attempt to develop the required plans within its own organization. Foremost among these is the desirability of obtaining the interest and involvement of the people who will benefit most directly from the implementation of the plan, and who must be relied upon to provide the greater part of the financial support for implementation. Without such support at the local or regional level, no plan can be successfully implemented under the present system, regardless of its technical soundness.

A second reason is that FWQA is not staffed to accomplish planning at the required level of detail, and a gearing up to perform this type of work would require an extended time.

A third reason for obtaining state and local participation in developing and implementing water quality plans is for consistency with the Administration's policy of a New Federalism.

The most basic kind of stimulation of local and state planning is financial. This is not only a necessary positive inducement, but in many areas is a necessity to enable any sort of planning to proceed. Without adequate funds for planning from the Federal level, any other type of stimulation will be ineffective.

Contributions to Water Quality Goals

- Would produce a more comprehensive and implementable set of plans for water quality in all areas.
- Would generate local support for implementing such plans.
- Would promote regionalization and greater effectiveness of construction and would tend to provide adequate facilities and to avoid future abandonment of poorly planned waste treatment plants.

5.5 FWQA Should Provide Guidance and Assistance to Local, Regional, and State Planning Agencies

FWQA guidance is needed to increase the utility and consistency of plans developed by local, regional, and state planning agencies, in a number of specific problem areas. Separate recommendations are made for several such problem areas.

5.5.1 Information Content of Implementable Plans

Problem: There is great inconsistency in the products of various planning organizations. Some small-area plans are complete, comprehensive, and contain all of the elements needed for implementation and for integrating the particular plan with other plans to form a more general plan for the larger area. But in general this is not the case. Furthermore, the information contained in many plans is not sufficient to indicate the course of action required for implementation.

Recommendation: Issue guidelines that identify the minimal content of local regional, or basin plans, as required for implementation and for integration with plans for adjacent or more inclusive areas (see minimal information requirements under Rationale, below).

Implementation Action Required: Such guidelines should be quickly formulated and issued by Headquarters Planning Office, after concurrence of Construction Grants Office concerning information requirements relating to implementation.

Rationale: There are two basic reasons for this recommendation. The first is that local area and regional plans should logically fit into a more general plan for water quality--the state or basin plan. But in general, the local plans are developed independently of the larger area plans. It should be possible to define those data elements in a local plan that are required to determine whether the local plan is consistent with the basin plan. At present these elements are not defined, and it is virtually impossible to determine whether a specific local area plan does fit within the plan for a more inclusive area.

The second reason is that any plan for achieving water quality whether local, state, or basin, should be formulated with a view toward implementation--otherwise, the plan is academic. As a bare minimum, an implementable plan requires the following elements:

- Map showing all sources and proposed facilities
- Characteristics of each source (total volume, concentration of each pollutant)
- Additional treatment needed to meet standards

- Optimal facility arrangement, based on analysis of alternatives:
    - Type plant, capacity of plant
    - Plant X treats wastes from sources A, B, and C
    - Plant location shown on map
- Implementation Agency for each facility
- Implementation schedule for each facility and staging for overall plan
    - Construction Grants Offer
    - Begin
    - Operational
- Revenue sources (each facility)
- Effects on water quality (estimated)
- Is plant included in other plans? Which plans?
- Financial analysis, including OM&R
    - Proposed expenditure for plan, vis a vis total resources and expenditures for jurisdictions involved
- A well-defined mechanism for updating.

FWQA's Planning Office should formulate a more comprehensive set of elements, with provisions for modification as required to adapt the list of any specific planning situation.

Contributions to Water Quality Goals

- Would make clear who is responsible for each implementation action, and when the action should be taken.
- Would greatly facilitate FWQA's and state WPC agencies' function of integrating local area plans into basin plans.
- Would facilitate budgetary planning and allocation of (discretionary) funds.

5.5.2 Minimal Size for Plants in Populous Areas

Problem: Uncoordinated or loosely coordinated planning by a multiplicity of jurisdictions in some densely populated areas leads to the construction of numerous small, inefficient treatment plants.

Recommendation: FWQA should establish guidelines for the minimal sizes of treatment plants, as a function of total population served and population density.

Implementation Action Required: Study by Planning Office in conjunction with Construction Grants Office at Headquarters to establish range of permissible plant sizes (capacities) for areas of given population and population density, taking into account industrial wastes.

Rationale: Provides a tool for use by planning agencies in recommending against too many small plants.

Contributions to Water Quality Goals

Promotes regionalization of facilities, with attendant increase in effectiveness of capital investment and efficiency in plant operation.

5.5.3 Elements to be Covered by State Criteria and Standards for Treatment Plants

Problem: At present, there are no Federal standards or criteria for treatment plants or sewers, such standards are provided by states. With certain exceptions, there is no general requirement for uniformity of elements covered by the standards for the various states.

Recommendation: FWQA should specify those elements that should be included in each states' criteria or standards for treatment plant and sewer design, equipment, and materials. (No numerical requirements--only an identification of variables to be included).

Implementation Action Required: Construction Grants Headquarters Office should examine existing state standards and criteria, identify those elements that should be a part of each, review this set of elements with regional offices, selected states, and associations of consulting engineers. After appropriate screening and obtaining a degree of consensus, Construction Grants office should publish the minimal list of elements as a guide to states.

Rationale: Would be a useful yardstick for use by regional offices and planning agencies for assessing adequacy of state standards and criteria for treatment plants and sewers.

Contribution to Water Quality Goals

Promotes better plant design and more efficient operation.

5.5.4 Glossary of Planning Terms

Problem: There is a great amount of confusion and uncertainty because of imprecise use of terms in the general area of planning. For example, the terms "comprehensive plan," "water quality plan," "metropolitan area plan," are often used without further definition and are at best ambiguous. Some form of agreed-upon definitions is clearly needed, in addition to an identification of which federal organizations engage in the various types of planning.

Recommendation: FWQA should prepare a glossary of planning terms for use both within its own organization and by external organizations involved in planning relating to water quality. This publication should indicate which Federal agencies are generally engaged in which types of planning.

5.5.5 Including an Engineer in Planning Groups

Problem: There is frequently a communication gap between people engaged in planning-type activities and in engineering-type activities, although both may be working in the general field of water quality. Such communication difficulties are probably a result of differences in orientation, plus a general unfamiliarity with the other type of activity.

Recommendation: FWQA should encourage local, regional, and state planning agencies to include an engineer on their staff or retain an engineering consultant to participate in the development of plans.

Rationale: Early participation by an engineer in planning activities could inject the necessary technical input to insure thorough understanding when plans are reviewed or used by facility-oriented engineers. Since there are relatively few planning projects compared with the number of specific construction projects, this seems a more practical and less complicated approach to bridging the communications gap than assigning a planner to coordinate with each of the numerous construction projects in which FWQA is involved.

5.5.6 Estimation of Costs of Planning

Problem: Local governments, states, basin commissions, etc., are engaged in planning of various types--some under contract, some using their own resources. All such organizations as well as FWQA would benefit by the availability of a method for estimating the cost of such planning activities, use both as a yardstick for gauging the reasonableness of bids and for use in estimating future budgetary requirements.

Recommendation: FWQA should develop a methodology for estimating the costs of various types of planning, as applied to a range of particular situations.

Implementation Action Required: Research by FWQA Headquarters Planning Office.

5.6 FWQA Should Coordinate the Planning Activities at all Levels, to Achieve Implementable Basin Plans for All Major and Minor Basins

5.6.1 Need for Implementable Basin Plans

Problem: The product of water resource planning to date is a hodge-podge of inconsistent and largely unrelated documents. Existing plans are largely non-implementable. Although careful and thorough planning is essential to the effective use of financial resources, the legislative requirement that each project receiving a construction grant be included in a comprehensive river basin plan has consistently been winked at. This was understandable in the early days of the Construction Grant program, since no acceptable comprehensive plan for a river basin was available. But after more than a decade in which $1.5 billion were expended by FWQA for construction of facilities costing a total of $6.3 billion, and some $40 million was expended by FWQA for planning, the required comprehensive plans are still not available and the responsibility for developing them is still not clearly defined.

Recommendation: FWQA should assume responsibility for coordinating the planning activities and products both within its own organization and those of all external organizations, to insure that integrated, implementable river basin plans are developed for each basin. Systems program management procedures should be utilized. The responsibility for producing such plans should reside ultimately with the Director of the Headquarters Planning Office, and secondarily with his counterpart in each Regional Office.

Rationale: To prevent continuation of the situation in which construction grants are issued virtually without regard to comprehensive plans, and thereby to move within the intent of the legislation which created FWQA as a governmental entity, FWQA must adopt a buck-stopping stance and assume responsibility for developing the required basin plans, and make the issuance of construction grants strictly contingent on conformance to such plans. By assuming this responsibility, FWQA need not perform the full task of creating the basin plans--this would be administratively and technically infeasible--but rather of assuring that the work already done and work that needs yet to be done by the multitude of existing planning organizations is rapidly integrated into implementable river basin plans.

Implementation Action Required: A policy statement by the Commissioner, plus the organizational change identified earlier (Section 5.1 and 5.2).

Contribution to Water Quality Goals

Adoption of this recommendation represents a necessary first step in reaching a rational system for optimal utilization of construction funds for prevention and abatement of water pollution.

5.6.2 Strategy for Rapidly Obtaining Useful Plans

Problem: Completed, implementable plans for all basins cannot be developed immediately, regardless of amount of effort required. Before such plans are completed, a large portion of construction grant funds will be committed. Some form of interim plans are needed for the purpose of evaluating construction grant applications, to determine whether they fit generally into a logical scheme of pollution control for the basin.

Recommendation: FWQA should develop a planning strategy that will produce usable but incomplete plans within a short time, and will later produce comprehensive water quality plans for each river basin. The strategy should assure that data acquired for use in developing the short range plans is available for the comprehensive plan and vice versa.

Implementation Actions Required: A three-phase strategy is recommended.

Phase I. Acquisition of existing planning data. Each regional office obtains all available planning information (completed plans, plans under development, planning agencies, their competency and authority, etc.). This information would be provided in large measure by the inventory of plans and planning agencies recommended earlier (Section 5.4). If begun immediately (early May, 1970) this task could be completed by the end of the fiscal year.

Phase II. Development of an outline or structure for the comprehensive plan for each river basin. This will require development of a "rapid tentative planning" procedure for proceeding with construction grants on some logical basis when planning data are insufficient. One approach is an follows. All valid plans and planning data available from the above inventory would be fitted into the structure. This, with a minimal amount of planning effort for tying together the various separate plans and for augmenting them with interim planning developed through rapid approximation techniques, should form the rudimentary basin plan that could be used to determine whether a construction grant project is in general conformance. This phase, if begun immediately, could be completed by June 1971. When completed, conformance of each application to this coarse basin plan should (with certain exceptions) be required as a basis for grants.

Phase III. Completion of Comprehensive Plans. Concurrent with Phase II and utilizing data from Phase I, this phase will examine the water quality management needs for each basin, and examine and evaluate means for meeting them. It will refine the structure of a comprehensive plan developed in Phase II, and will augment (or replace, where necessary) the existing plans included in this structure. This phase of planning will combine in-house planning, basin commission and committee planning, 3c plan development, appropriate interagency plans which give full consideration to water quality, state planning, and local planning activities. The ultimate goal of this phase III planning is to provide a blueprint for showing where waste treatment facility construction will be most effective and will be the means for initiating facility construction. Phase III should develop an implementation and use strategy for each basin plan so that the facilities construction program can interface with planning as a logical step-by-step procedure.

Initial effort under Phase III should be concentrated on those areas in each region with obviously severe pollution problems. Completion of basin plans involving these areas should be accomplished by December 1972, and for all areas by June 1973.

Contribution to Water Quality

- An early set of coarse basin plans that can be used for determining conformance of Construction Grant applications to the abatement plan for the basin (June 1971).

- A later set of comprehensive basin plans for each basin that (1) can be used to determine conformance and (2) provide a firm schedule of actions and assignment of responsibilities for implementation.

5.6.3 Responsibility for Coordination of Planning Efforts of Various Jurisdictions

Problem: Planning performed by localities or regional agencies within a state is usually specific to those particular local areas, and does not take into account the planning done for contiguous areas or for the river basin as a whole. A similar degree of independent planning action exists in some cases for planning by states on the same river basin.

Recommendation: Regional offices should encourage state WPC agencies to insure coordination of local planning on the same intrastate basin, and regional office should monitor this effort. Regional offices should insure that all state WPC activities are coordinated, particularly those on the same river basin.

5.6.4 Guidance for State Program Plans

Problem: At present, the minimal content required in state program plans is specified by legislation. This minimal content is not adequate for FWQA's planning purposes, and often does not relate to basin planning per se. Much additional information is needed about the status of basin planning within states (the proposed new Regulations require such information). State program plans are a logical vehicle for conveying this and other needed information. Another major problem affecting FWQA planning is tardy submittal of state plans. This problem is extended by the legislative limitations of FWQA's actions for imposing requirements on the content of state program plans. The desired changes in state plan content or format must be accomplished by suggestion, argument, and persuasion rather than directive.

There should be little reason for states to resist or impede the development of State Program Plans, relations between FWQA and state WPC agencies suffer, however, because the Plans are postured as a "federal requirement." Actually, the information developed is important to the states' internal operations in water quality control; emphasis on and demonstration of this fact will help improve relations. State accounting systems are not uniform--a major problem for States when compiling data in the federal format. FWQA assistance in working out agreeable information processing methods will help, also.

Recommendations:

(1) Promote closer relationship between FWQA Headquarters plans--more FWQA leadership.

(2) Develop national guidelines for state program plans to insure compatibility with regional or interstate river basin plans, and to provide consistent format of presentation.

(3) Ask states to develop a statewide basin-by-basin water quality management plan to guide in allocating construction grant funds, and submit as part of the state program plan (Section 7) no later than FY72. This plan should consider all other water quality plans including the water quality standards implementation plan.

(4) Issue additional guidelines for state priority systems, (1) to insure against gross inequities, (2) to direct attention and funds toward critical problem areas.

(5) Develop an objective method of evaluating State Program Plans.

(6) Printouts of state 5-year lists should include dollar value of projects.

(7) Encourage State WPC agencies to contact every community at least once a year, to increase reliability of 5-year lists.

(8) Critically review the information requested in State Program Plans, for purposes of simplification and deletion of unnecessary data.

(9) Evaluate pros and cons of a penalty system for late submittal of State Program Plans (e.g., reducing state's allocation by 1/12 for each month's tardiness).

APPENDIX 3

RECOMMENDATIONS FOR ENHANCING TECHNOLOGY TRANSFER FOR CONTROL OF WATER POLLUTION

		Page
1.0	STATEMENT OF PROBLEM AND NEED	81
2.0	PROPOSED APPROACH TO THE PROBLEM	82
3.0	RECOMMENDATIONS	88
4.0	SUMMARY OF FWQA RESEARCH AND DEVELOPMENT	88
5.0	TELEPHONE SURVEY ON USE OF R&D RESEARCH INFORMATION ON GRANT PROJECTS	91

Preceding page blank

APPENDIX 3

RECOMMENDATIONS FOR ENHANCING TECHNOLOGY TRANSFER FOR CONTROL OF WATER POLLUTION

1.0 STATEMENT OF PROBLEM AND NEED

As technology causes increases in industrial output, and as population increases, there are resultant increases in waste products, new technology must be developed and implemented to cope with these increases to proved cost-effective control and abatement. Project HINDSIGHT, carried out by the Department of Defense, demonstrated that it takes between 30 and 50 years for fundamental scientific discoveries to be converted to large scale usage. For technological innovations the conversion time is reduced to 10 to 15 years. This time scale is unacceptable for solving the near-term problem of obtaining water quality goals. This time scale can be reduced to five years or less for technical innovations by focusing objectives and resources purposefully as demonstrated by the military for certain high priority weapon systems.

Generally, the methods used for primary and secondary treatment of municipal and industrial wastes are the same old methods used in the first quarter of this century. This situation exists in spite of an active FWQA Research and Development (R&D) Program which is equipped to stimulate innovation in pollution abatement methods and bring these to the point of demonstrated technical feasibility. The problem is the absence of means to transfer this technology into wide scale acceptance and use. Over 571 research and demonstration grants oriented towards the Construction Grants program have been undertaken since 1 July 1968 with many completed as shown in Section 4.0, below. However, according to a poll of Regional Offices (Section 5.0) only two of these (both phosphate removal processes) have been transfered into Construction Grants Program usage. Some may be in the pipe-line of transfer, but the record certainly indicates a problem.

This problem can be related to at least three basic causes:

(1) Lack of motivation for mature civil and sanitary engineers and operators to change, to learn new methods and techniques.

(2) Unwillingness of many consulting engineering firms to undertake the risks, financial and reputation-wise, of introducing new, unproven technological innovations.

Preceding page blank

(3) Inability of innovative techniques brought forth by FWQA R&D program to be transferred into effective Construction Grants projects. The cause is not necessarily either the R&D or Construction Grants (CG) programs but the lack of means to enhance the interface between them.

It is important to note that no assessment of the adequacy or inadequacy of either the FWQA R&D Program or the Construction Grants Program is involved at this time. These questions may be asked at a later time. The focus, here, is the transfer of technology across the interface.

Underlying all technological innovation and transfer is the problem of risk and uncertainty. There are risks in terms of unknown or unquantifiable factors in the successful application of innovative processes. The time and resources expended to minimize risk can result in delays and expenditures that make the transfer infeasible Thus risks and uncertainties must be assessed and related to potential payoffs to be understood. Then there must be an agent who assumes responsibility for the risk in a knowledgeable manner.

In summary, the problem is that technological transfer does not occur in FWQA partly from the general problem of technological transfer, change, risk, and uncertainty, and partly from the lack of a specific mechanism in FWQA to facilitate transfer across organizational and behavioral barriers. Research and development personnel have different orientation, education and goals from construction people and communication is difficult at best.

2.0 PROPOSED APPROACH TO THE PROBLEM

A solution to the problem of technology transfer is proposed which emphasizes a structured mechanism for enhancing transfer which has three major components:

(1) A defined process and methodology for bridging the interface between R&D and CG.

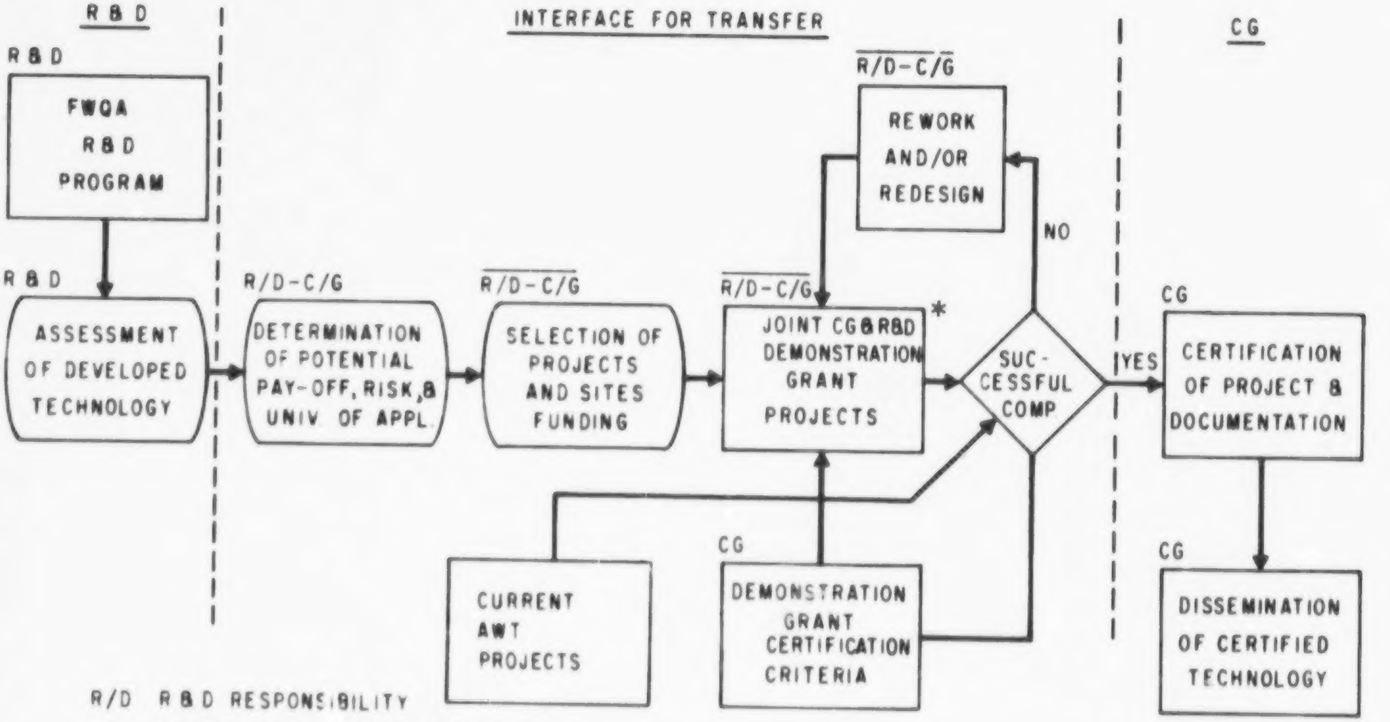
(2) Technology transfer teams with responsibility to effect the orderly transfer of specific projects through the process.

(3) Minimization of and assignment of responsibility for risk to FWQA in a controlled manner through process certification. At this time no major changes are sought in the present R&D and CG programs, but only the means for bridging the gap between them.

The proposed process is shown in Figure 3-1. It consists of the following parts:

- R&D
  - The present R&D program
  - An assessment by R&D for potential, feasible technology
- Transfer
  - A determination of potential candidates for transfer in terms of potential payoffs, risks, and the universality of their application
  - Selection of projects for certification and sites and establishing the funding required
  - Establishment of criteria for demonstration grants which, if met, will allow certification of the process examined
- Joint CG and R&D
  - Demonstration grant and contract projects with adequate extra funding to assure that certification criteria will be met if successful
- CG
  - Acceptance/Rejection Decision with possible rework or redesign or rejection by independent reviewers
  - Certification of the process which necessitates the complete documentation of the project in terms of engineering, real costs, and performance
  - Dissemination of certified processes to consulting engineers, local regional water pollution control agencies, etc.

The goal is eventual certification of selected and specified processes. Certification by FWQA will minimize risk to the user. On the other hand certification is worth money to an industrial firm whose process or product is certified. Thus, if FWQA assumes the risk of certification, the industrial community should accept some portion of the expense of certification and the risk of not being certified.


R&D
INTERFACE FOR TRANSFER
CG
R&D
FWQA R&D PROGRAM
R&D
ASSESSMENT OF DEVELOPED TECHNOLOGY
R/D-C/G
DETERMINATION OF POTENTIAL PAY-OFF, RISK, & UNIV. OF APPL.
$\overline{R/D-C/G}$
SELECTION OF PROJECTS AND SITES FUNDING
$\overline{R/D-C/G}$
JOINT CG & R&D DEMONSTRATION GRANT PROJECTS
*
$\overline{R/D-C/G}$
REWORK AND/OR REDESIGN
NO
SUC-CESSFUL COMP
YES
CG
CERTIFICATION OF PROJECT & DOCUMENTATION
CG
DISSEMINATION OF CERTIFIED TECHNOLOGY
CURRENT AWT PROJECTS
CG
DEMONSTRATION GRANT CERTIFICATION CRITERIA

R/D R&D RESPONSIBILITY

C/G CONSTRUCTION GRANT RESPONSIBILITY

$\overline{R/D-C/G}$ JOINT TECHNOLOGY TRANSFER TEAM RESPONSIBILITY

R/D-C/G JOINT RESPONSIBILITY

* INCLUDES R&D RESEARCH, DEVELOPMENT AND DEMONSTRATION GRANTS AND CONTRACTS

FIGURE 3-1
PROJECTED PROCESS FOR IMPROVING TECHNOLOGY TRANSFER OF POLLUTION ABATEMENT METHODS

To effect transfer of specific projects, technology transfer project teams would be established at the regional level. These would consist of a group comprised of members from both R&D and CG, and would have the designated responsibility for that project along with the local government involved in the installaiton. This team would have prime responsibility through a project manager selected from the team who would report directly to the Regional Director for that project. Whether teams or individuals would work solely on a project or split their workload would depend upon the demands of the specific project.

The required steps to carry this program out are shown in Table 3-1.

It may also be desirable to develop incentive or bonus programs with the Construction Grant Program to motivate states and localities, the final users, to use new cost-effective advanced water treatment methods that have been certified. The inertia to learn new technology, to change from old methods, and to deal with uncertainty, are great. A bonus plan might help to overcome these.

It is important to note that this recommended process is in addition to enhanced dissemination of new technology by R&D and closer involvement of Construction Grant personnel with R&D activities.

2.1 The Case for Certification

There has been little incentive for local municipal and state sanitary and civil engineers and, more importantly, the consulting engineering firms that design water treatment plants to assume the risk of innovating new techniques and processes. The study team in talking with consulting engineering firms around the country found that these people were aware of the need for new technology, but were unwilling to assume the risks of process failure, both in terms of financial risk and risk to their reputation. The old methods work; why take a chance on a new, possibly cost-effective method which involves a great deal of uncertainty and risk? These people both realize the need for new technology and are motivated to do something about it, but are economically and politically unable to act due to high risk.

The states, municipalities, and consulting engineers have all asked for a government certification of new processes. As opposed to depending on the sales pitches of industrial process equipment suppliers, they would like to have proven demonstrations under real conditions to prove the validity of the approach. This implies detailed engineering documentation, firm cost estimates, and validated performance results and conditions.

TABLE 3-1
REQUIRED STEPS TO IMPLEMENT THE PROCESS*

1. Establish criteria for certification - (CG)
2. Establish funding policy for demonstration grants including cost sharing by industry. (Although up 100% grants are possible, certification will imply higher costs which might be assumed in part by industry.)
3. Develop methods to assess payoff, risk, and universality for selection of grant projects.(R&D - CG)
4. Establish objectives and policy and procedures for technology transfer project teams. (R&D - CG)
5. Establish the policy and procedures for total transfer process. (R&D - CG)
6. Establish means for review and certifying projects in an independent objective manner. (CG)

---

*This process is for those demonstration grant projects selected to be certified, not all demonstration grant projects.

With such a certification, these groups would be modified to implement new technology since risk would be minimized. If the certified processes were backed by FWQA, then there would be little risk. This means that if a process was certified and still had deficiencies, the government would insure the risk. This implies that a Federal level certification process must assess and minimize the risk of deficient processes. Therefore, a methodology as shown in Table 3-1 is a necessary prerequisite.

Because of the added costs of demonstration grants that are to lead to certification, not all demonstration grants are to be certified. Only those with minimum risk, high payoff, and wide application would be considered. Since certification would be valuable to an industrial manufacturer, it is feasible to consider a cost-sharing plan with industry to cover the added costs for certification.

Certification must occur through a process of independent evaluation- independent in the sense that the evaluators must not be the implementors. Thus, FWQA must take the responsibility for certifications, not those involved with the demonstrations grant.

Certification of AWT is necessary to motivate potential users to utilize advantageous new technology. The costs of certification would be marginal additions over present demonstration grants as long as a methodology and process for certification exists at the Federal level.

2.2 Case for Technology Transfer Teams

At present, demonstration grants for AWT are under the jurisdiction of the R&D program. While change from this position is not necessary to enhance technology transfer, the heavy involvement of the CG Program into the demonstration grant program is necessary. Construction Grants is closer to the final users and will assume the risk in certification. A suitable means for ensuring the meaningful transfer of technology from R&D into use is the establishment of technology transfer teams, dedicated to the transfer of particular innovations into wide scale use.

These teams would be made up of both R&D and CG people and would have a responsible team leader. Initially, this program leader might be from R&D; whether, he would continue as program leader throughout or if a CG man would take over later in the program is not yet clear. The advantages and disadvantages of both or alternate approaches will have to be weighed.

The selection of processes to undergo the transfer process would be determined at the headquarters level. The selection of a site would require inputs from the Regions. Once a project and site are established for a demonstration grant to be certified, a technology transfer team would be set up at the regional level, reporting to the Regional Director. They would have the entire responsibility to see the program through certification. They would be able to call upon outside resources as required and would work very closely with the local people involved. Since demonstration grants can reach 100% federal share, FWQA control should be maximal. Determination of funding levels and attempts to achieve industry cost-sharing would involve higher level approval. Certification itself, would be out of headquarters and might involve a contract with outside consultants for measurements. That is, the team should not evaluate its own results.

A team may be dedicated to a single project or may have multiple projects assigned to them as need dictates. However, they must maintain prime responsibility for each project assigned.

3.0 RECOMMENDATIONS

Establish at the federal level a methodology for technology transfer, including certification and technology transfer teams to bridge the gap between R&D and CG. The implementation of teams would be at the regional level, the planning of the overall program selection of projects, and certification would be accomplished at the headquarters level.

4.0 SUMMARY OF FWQA RESEARCH AND DEVELOPMENT*

	FY 1969	FY 1970
Total Dollars	$55,211,000	$48,509,000

4.1 Summary of Construction Grant Oriented Projects

Type	No. of Awards	No. Completed
Research	370	63
Development and Demonstration	201	37

---

*Data Supplied by FWQA R&D Office.

TABLE 3-2
SUMMARY OF R&D PROJECTS BY SUBPROGRAMS

	Total No. of Awards Begin. 1 July 1968	Total Federal $ for these Awards	No. of Completed Projects thru 1 April 1970	Total Federal $'s of Completed Projects thru 1 April 1970
Subprogram #1100: *"Municipal Pollution Control Technology"*				
Research	--	--	--	--
Development & Demonstration (Combined	79	16,453,891	14	2,646,057
TOTALS	79	16,453,891	14	2,646,057
Subprogram #1200: *"Industrial Pollution Control Technology"*				
Research	--	--	--	--
Development & Demonstration (Combined)	82	11,447,854	21	1,873,622
TOTALS	82	11,447,854	21	1,873,622
Subprogram #1500: *"Other-Sources-of-Pollution Control Technology'*				
Research	--	--	--	--
Development & Demonstration (Combined)	40	2,588,413	2	123,900
TOTALS	40	2,588,413	2	123,900

TABLE 3-2 CONTINUED

Subprogram #1600: *"Water Quality Control Technology"*				
Research	204	8,215,646	38	1,258,095
Development & Demonstration (Combined)	--	--	--	--
TOTALS	204	8,215,646	38	1,258,095
Subprogram #1700 *"Waste Treatment & Ultimate Disposal Technology"*				
Research	166	12,557,580	25	760,336
Development & Demonstration (Combined)	--	--	--	--
TOTALS	166	12,557,580	25	760,336

4.2 Summary of Construction Grant Oriented Projects by Dollar Value

Type	Awards	Completed
Research	$20,773,226	$2,018,431
Development and Demonstration	25,490,158	4,643,579

4.3 Breakdown by Subprogram

The number and costs of projects are summarized by subprogram in Table 3-2.

5.0 TELEPHONE SURVEY ON USE OF R&D RESEARCH INFORMATION ON GRANT PROJECTS*

Northeast	None
Middle Atlantic	None
Southeast	One project - phosphorous removal and use of filter press for dewatering sludge
Great Lakes	Symposium on Phosphate removal - same application in the region.
South Central	None
Southwest	None
Northwest	None

---

*Survey conducted by Headquarters FWQA personnel.

APPENDIX 4

MANAGEMENT INFORMATION SYSTEM

Page

1.0 STATEMENT OF PROBLEM AND NEED 95

2.0 RECOMMENDATION 95

3.0 RATIONALE 95

4.0 IMPLEMENTATION ACTIONS REQUIRED 97

5.0 CONTRIBUTIONS TO WATER QUALITY GOALS 98

Preceding page blank

APPENDIX 4
MANAGEMENT INFORMATION SYSTEM

1.0 STATEMENT OF PROBLEM AND NEED

There is no comprehensive information system within FWQA capable of providing agency-wide information needed by management as a basis for decision making. Difficulties in obtaining needed information have been cited by various levels of management ranging from Regional Office branches to the Assistant Secretary's office. This situation exists in spite of the fact that at least three substantial information systems are operated by FWQA--in the Construction Grants Program Office, in R&D, and in Enforcement (STORET).

2.0 RECOMMENDATION

FWQA should immediately undertake development of an information system that will provide timely, organization-wide information in a form adapted to the needs of each managerial level. Such a system should utilize existing data bases and equipment to the maximum extent practical, and should define the needs for any additional data and for required modifications to existing equipment and software.

3.0 RATIONALE

Most if not all of the data needed to provide information required by management is now being or is planned to be acquired and recorded. This is certainly true for the Construction Grants Program, and indications are that it is generally true throughout the organization with some exceptions. There exists a wide gap, however, between the availability of basic data and the availability of summarized information required for decision making. Such information is generally not available to FWQA management when needed.

The one purpose for which a management information system can be justified is to provide a basis for making sound decisions--decisions based on quantitative historical information or well-grounded projections. Raw data are virtually useless for this purpose, or at best highly inefficient. Such basic data must be summarized into a form easily used by the decision maker, the degree of summarization being different for various levels of management. The basic data should, however, be readily accessible to the decision maker if needed for back-up or detailed analysis of the summary information.

Preceding page blank

As an example of this type of summarization that requires more detailed backup, the Assistant Commissioner for Operations would probably be interested in the total dollar volume of reimbursible projects and the distribution of the demand for this money by fiscal year. However, he might also be interested in the distribution of reimbursible projects (dollar volume) by region or State as an input to a formula for distributing Construction Grant manpower, since the personnel requirements for processing reimbursible projects may differ from requirements for ordinary CG applications. Hence the Assistant Commissioner's office should be able to interrogate the system for the more detailed information, and obtain a quick response.

Another example is to decide if a grant request is consonant with comprehensive planning and has a proper priority for action. Thus, some aggregated planning and priority information are required at high management levels.

The file structure of an information system best suited for this type of top-down interrogation is not the same as that best suited for efficient storage of general administrative and technical data. The more general data base has three types of data: technical (including scientific and engineering data, economic data, planning, surveillance, etc.), administrative (including financial data, personnel, organizational, etc.), and external (census data, economic projection, government policy, etc.).

At present only some surveillance, financial, and project status data are available on existing systems. Such data are best stored in a file having a hierarchial structure, with the most detailed level of storage at the base, and increasing degrees of summarization corresponding to the reports required by increasingly higher levels of management. Although a file with this type of structure contains the basic data in any needed level of detail, it is a complex process (requiring special programming in the case of a computerized system) to call forth any particular set of data not normally included in routine reports. A special type of data file (termed an "inverted" file) which contains data periodically extracted from the general file and especially adapted to the needs of particular management levels, would permit simple and rapid access to data at any level of detail likely to be required by any particular management office.

For any management information system to be effective, a minimal consistency of basic input data is necessary. Elements included in cost summaries or workload summaries must be the same, regardless of which region assembles the data. This is not the case with FWQA. For example, in the Northeast Region, application processing and project work (associated with specific projects) include six separate elements; in the Midwest Region, ten categories are used. The Headquarters breakdown is again in six elements, but these are different from the six used by the Northeast Region. Further, in the Northeast Region, projects are subdivided into "normal" and "regional", a division not generally used in other regions. Similar differences exist in the record keeping for workload in terms of number of projects in various stages of development.

A system to data acquisition and recording must be defined to provide the basic data required for all FWQA management information needs (discussed later) and external needs, such as for the Bureau of Budget's program planning and budgeting system. The system must be utilized uniformly and consistently throughout the organization.

4.0 IMPLEMENTATION ACTIONS REQUIRED

4.1 Determine Management Information Needs

The total information needed by each management level (Headquarters, Regional, and external) and the presentation format most appropriate to each, must be determined. This can be effectively done by postulating the type of information, the frequency of reporting, and optimal format needed; and then seeking concurrence or revision by recipients.

4.2 Determine Data Needed to Provide Required Information

There are sets of data requirements to meet each of management's information needs. The marginal increases. Data needs should be identified and costed to providing means for measuring the added expense in providing necessary data.

4.3 Refine List of Management Information Needs, and Select a Sub-Set that Can Be Cost-Effectively Met

The priority list of needs and the cost of providing these needs should be matched to determine an ordered list of cost-effective requirements. These priorities can be used to develop a firm, realistic set of MIS requirements.

4.4 Review Existing Systems (Equipment and Procedures) to Determine the Extent to Which They Fulfill Defined Information Needs, and Assess Required Modification, Augmentation or Upgrading

4.5 Develop Specifications for the System

A specification should be developed for the procedures and systems necessary to implement the MIS system. This must take into account existing and new computer facilities in the planning stage as well as the special requirements that may be dictated by the MIS.

4.6 Implement the Specified System

Through contract and/or in-house effort, as required.

5.0 CONTRIBUTIONS TO WATER QUALITY GOALS

Better, more timely information on

- Project status (construction, R&D planning enforcement, etc.)
- Total projected needs (dollars, resources)
- Personnel loading and deployment
- Distribution of financial resources
- Planning status
- Current program status
- Priorities for action
- Pollution situation and needs.

should lead to more effective utilization of total resources to achieve water quality goals in a rapid, systematic manner.

APPENDIX 5

FINANCING

Page

1.0 BACKGROUND 101

2.0 PROBLEMS 105

3.0 RECOMMENDATIONS 112

ANNEX A CONSIDERATION OF BILLS TO FINANCE THE CONSTRUCTION GRANTS PROGRAM 123

ANNEX B APPLICATION OF FUNDS AND STATE STAFF TO WATER QUALITY NEEDS 135

ANNEX C TABULATED DATA ON STAFFING, WORKLOAD, AND PROJECT FUNDING IN THE CONSTRUCTION GRANTS PROGRAM 140

APPENDIX 5
FINANCING

1.0 BACKGROUND

Financing of the Construction Grants Program is perhaps the most controversial of any of its aspects. Table 5-1 gives the basic status of the Program. The controversies stem from the previous low-level appropriations made for the Program and from some of the arbitrary limits placed on individual grant allocations. These limits are shown in Table 5-2. Also, the fund allocation formula as directed by the legislation has led to uncertainties and inequities in the use of the funds. However, the study team in its discussions at the Regional[*], state, and local levels did not encounter significant recommendations for changes in the existing legislation to address the overall level of funding for the Program or the specific allocations to the States. Instead most recommendations addressed cash flow problems of the municipalities, inadequacies in resources for planning, and lack of coordination amongst the federal agencies.

The larger issues have been addressed by the proposed legislation that the Administration has pending currently before the U. S. Congress. This legislation is intended to provide adequate funding for municipal sewage treatment plant construction, to decrease the uncertainty in that funding, and to make more effective us of the funds. The basic features of the Administration proposal are shown on the accompanying Table 5-3. Briefly, a total of $4 billion is requested to be authorized for grant agreements or other arrangements at the rate of $1 billion per year. A different allocation formula from the present Act for providing funds to the states is requested, with 20% of funds appropriated to be retained by the Secretary for application to specific needs. The state priority formulas would be changed to emphasize water pollution control needs and an Environmental Financing Authority would be set up to ensure that municipalities can borrow the funds they need for construction. The $4 billion figure represents 40% (that is, an average grant) of a total $10 billion requirement as given in the document "Cost of Clean Water 1970." A variety of other bills has been submitted to Congress in this session to attack the same general areas of controversy. These several bills and other recommended proposals for financing the Program are described in Annex A to this Appendix. It is neither our purpose or intent to debate these several approaches here but rather to consider all proposals for improving the Program. In the following set of specific recommendations, we will indicate where we feel the legislation proposed by the Administration can be strengthened. Also we will recommend regulations and directives to respond to suggestions by regional, state, and local personnel.

---

[*] Upper case "R" denotes FWQA Region.

Preceding page blank

TABLE 5-1

STATUS OF THE CONSTRUCTION GRANTS PROGRAM

	FY1968	FY1969	FY1970	FY1971
Authorizations	$450M	$700M	$1B	$1.25B
Appropriations		214M	800M	1.00B Requested
Expenditures		215M	258M	465M (Total FWQA)
Active Projects		2464	2636	(3056 Estimated)
Under Construction		1350	1504	(1674 Estimated)
Applications Reviewed		1282	1700	(2250 Estimated)
Plants Completed		749	1030	(1235 Estimated)
Total Systems at End of FY	13,849[1]	14,598	15,628	
New Facilities Needed	2,334[2]			
Major Upgrading Needed	3,133[2]			
Minor Upgrading Needed	932[2]			
Projects Started under Reimbursable Provisions	880			
Reimbursables Owed			322M	814M (Total)

[1] Replacement Value Estimated to be about $9B.

[2] "Backlog" estimated to cost about $4.4B at end of FY68. (Applications pending at state or federal level total about $3B.)

TABLE 5-2

PREVIOUS LIMITATIONS ON THE PROGRAM

PERIOD	MAXIMUM LIMITATIONS* INDIVIDUAL PROJECTS	MULTI-MUNICIPAL PROJECTS
July 1, 1956 - June 30, 1961	$ 250,000	$ 250,000
July 1, 1961 - June 30, 1965	600,000	2,400,000
July 1, 1965 - June 30, 1967	1,200,000	4,800,000
After June 30, 1967	No limit	No limit

---

* Currently, the only limitation on grants is the requirement that at least 50% of the first $100 million appropriated each fiscal year be used for grants for treatment works serving municipalities of under 125,000 population.

TABLE 5-3

ADMINISTRATION BILLS FOR FINANCING THE CONSTRUCTION GRANTS PROGRAM

- S3470 (HR16022), S3471 (HR16028), S3472 (HR16035)
    - Adequate Funding
    - Decreased Uncertainty
    - Effective Use of Funds

- $4B AUTHORIZED
  ". . . Grant Agreements or Otherwise . . ."

	FY71	FY72	FY73	FY74
				(Report on Needs for FY75-59)
- OBLIGABLE	$1B	$1B	$1B	$1B ("No-Year" Funds)
- AUTH. FOR LIQUIDATION	AS REQ.	AS REQ.	AS REQ.	AS REQ.

- ALLOCATION TO STATES
    - 60% by Population (Except First $100M)
    - 20% by 25% Matching Policy
        - Addresses Incentive to States
    - 20% by Needs/Requirements
        - Addresses Application to Greatest Need, Basin Requirements

- PRIORITIES
    - "Financial Need" is Struck
    - Water Pollution Control Needs Retained

- PLANNING
    - Requires River Basin and Metropolitan Planning
    - Deletes 10% Bonus for Inclusion in Metro Plan

- ENVIRONMENTAL FINANCING AUTHORITY S3468 (HR15903)
    - Intent: Eliminate "Inability-to-Borrow" as Deterrent

2.0 PROBLEMS

2.1 Construction Grants Funds Have Not Been Applied to the Areas of Greatest Pollution Control Need.

It is abundantly clear that funds have not been made available to construct treatment plants for many cities and metropolitan areas where there is great need for sewage treatment. Reasons are manyfold. These include:

(1) Generally inadequate appropriations, at least until fiscal year 1970.

(2) A restrictive allocation formula so that some funds were not spent by the states to which they are allocated.

(3) Inadequate state criteria so that projects were funded on a readiness-to-proceed basis, rather than on a need basis.

(4) Inadequacies in planning.

(5) Failure to provide munipalities with sufficient economic and other types of incentive to stimulate applications from the most needy areas.

(6) Inadequate coupling of financial and planning resources with enforcement actions.

The direct result of these failures and inadequacies has been that treatment plants were not built where they were needed. For instance, Toledo, Ohio, against which a compliance proceeding was initiated in September 1969 to force construction of a waste treatment works stood number 51 on the Ohio 1970 priority list. Many other instances of plants not constructed or inadequate plants not upgraded can be cited in which their priority was so low they did not receive funds and even if they stood high on the priority list they could not find the funds to match the federal grant.

Most state criteria involve many factors which are weighted so as to reduce the overall impact of the water pollution control need of the area involved. Generally, this has worked to the advantage of smaller communities versus large communities wherein the large communities are left contributing an extensive fraction of the pollution while the smaller communities'needs were corrected. Figure 5-1 shows the expenditures of the number of projects for cities less than 2500 and for cities greater than 250,000 in population for the years 1957 to 1969.

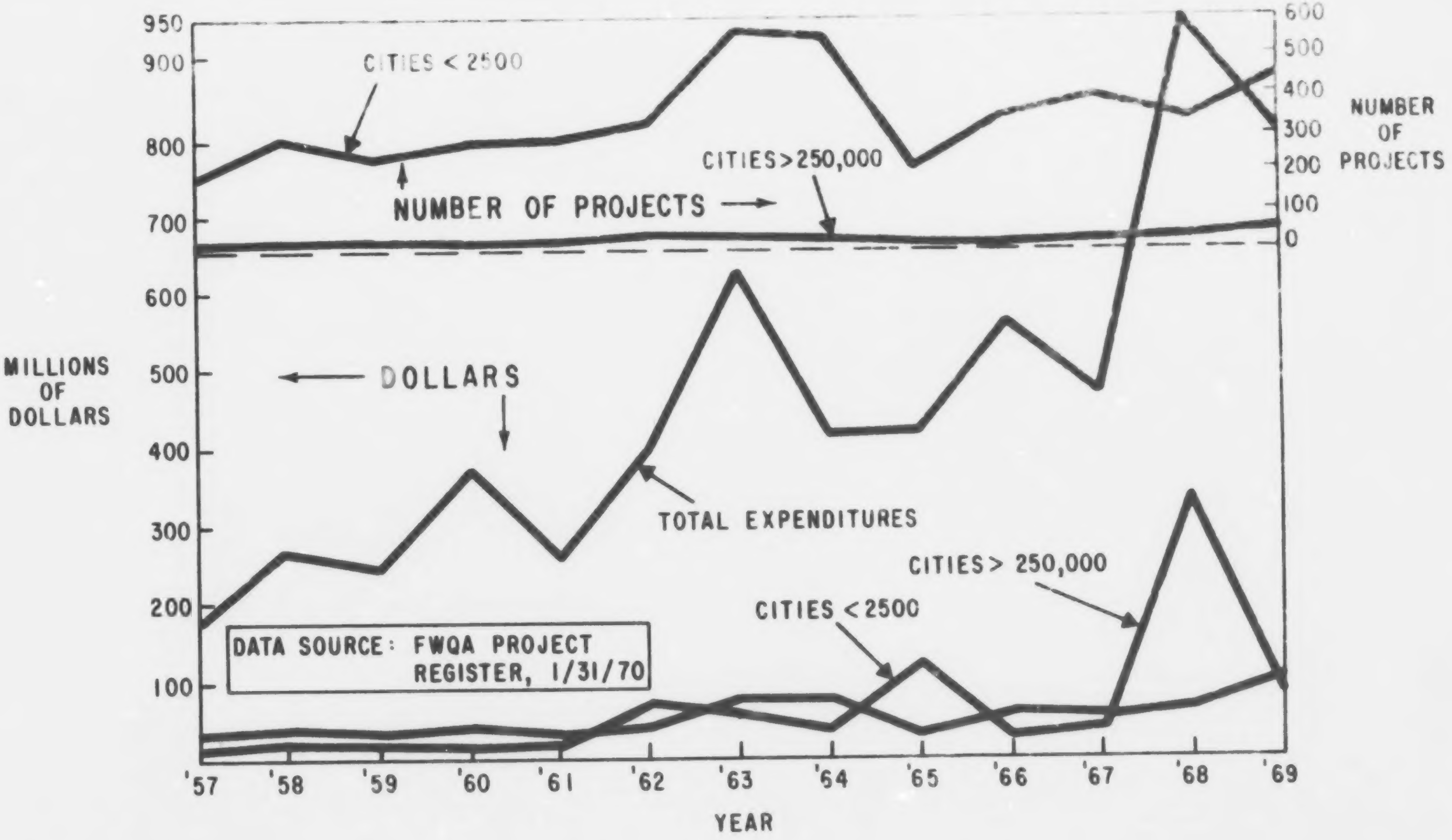


FIGURE 5-1

EXPENDITURES AND NUMBER OF PROJECTS FOR SMALL AND LARGE CITIES

As noted above, the advantage of the small cities was written into law until mid-1967. The sharp downturn in the chart for 1969 evidently reflects incomplete figures for that year. Excluding 1969, the sharp upturn in 1968 for the larger cities in both the number of projects and the total dollar amounts received in Federal grants indicates that the large cities may well be able to compete for funds now that there are no legal restrictions written into the law. In fact, some concern was expressed by officials from smaller communities that they would have difficulty getting grants in the future.

The primary problem however is not small city versus large city but rather a rational matching of funds to needs using pollution control-oriented criteria and proper planning. Furthermore, since pollution from industrial sources is approximately 2-1/2 times larger than from municipal sources and growing faster, additional capability for treating industrial wastes along with municipal wastes and additional methods for handling industrial wastes not treatable in municipal systems must be found.

2.2 Federal Funding Is Uncertain and Inequitable

The strongest criticism of the program from municipalities concerns the uncertainties of federal funding and more particularly the inequities involved in a community waiting to handle its pollution needs until it can get a larger fraction of federal funds. Communities who have gone ahead on their own at some financial sacrifice were quite critical about this aspect. As one city official put it:

> "It is quite ironical that [certain] communities through intentional delay of their programs and the continued discharge of untreated sewage have profited substantially by a much higher percentage of grant funds than was available to those communities who in good faith placed their full programs to the construction stage in the early 60s under then existing state and federal programs."

The percent federal share in projects increased from an average of 5% in 1959-61, to 9% in 1962-66, to 18% in 1967. Currently grants are a maximum of 30% except if the State agrees to pay at least 30% of the cost of all waste treatment projects eligible for federal funds, in which case the grant can be as high as 40%. If the State contributes at least 25% and has enforceable standards the federal grant can go to 50%. Furthermore, if the project is included in a metropolitan plan, the federal grant can be 55%. Thus a community in the most favorable circumstances need put up only 15 to 20% of the cost of construction. Of course, to a great extent these variations are due to state actions and are not under the control of either FWQA or the municipality. Some city officials have argued for a straight 50% grant by FWQA, ignoring any state action (only 15 states currently contribute the 25%). Others have suggested that communities which have gone ahead and have not received full federal funding receive an incentive grant of 20% on new projects up to the total of federal funds they would otherwise received had they received full 30% funding on the original projects. It would appear to be the case that federal criteria, at least, should take into account those cities that have moved expeditiously to meet their pollution needs.

Uncertainties in the level of federal funding have always hurt the Program. Municipalities and states have been unable to make long term plans which are required for a construction program of this magnitude. Many officials stated the need for being able to enter into long term contract authority with the state and federal government to cover their construction needs. The fact that municipalities can proceed on their own and receive federal funds on a reimbursable basis later on has helped some, but if these reimbursables are not provided by the federal government in the near future this incentive will disappear. On the other hand, even with the reimbursable clause in the Act, many municipalities cannot proceed due to financial difficulties in raising the money for construction without firm commitments of the federal funds.

Several communities mentioned the impact on their financial position of a federal requirement for secondary treatment rather than primary treatment for all liquid wastes. An official of Seattle Metro indicated that $57 million of interceptor sewers and other facilities could not be built if they were forced to build secondary facilities for all of their treatment plants within the next few years. In Kansas City, a local official estimated that secondary treatment would cost $36.5 million more than they had planned to spend. He felt the city could accomplish this by 1975 but it would require a 40% increase in sewage charge rates and $37 million in short term borrowing. If he could take until 1983 he would only need a 13% increase and $7 million in short term borrowing spread out over 12 years. He felt that short term borrowing was necessitated primarily by the lag between letting of contracts and receipt of federal grants. If he could be assured of federal funds over at least the next four years he could more adequately schedule the construction payments. However, their main point was the uncertainty in their plans caused by federal regulations, which in their view was unnecessary, and the inadequacy of federal funds to cover the cost of the new requirements.

2.3 Payment Schedule to Localities Causes Cash Problems

Many community officials mentioned the problem of the financial burden which occurs due to the requirement for short term borrowing during construction of waste treatment plants necessitated by the payment schedule of the federal funds. In general the first federal payment is made upon receipt of an application indicating that 25% of the construction is completed. This payment can then actually occur within two to four weeks later, depending on processing time. The same holds true for the 50 and 75% payment. The final payment is, of course, withheld until the final inspection.

On a large project with many subcontractors, a number of the site preparation and foundation subcontractors may have long completed their efforts before the federal grant is available. These have to be paid by the municipality out of short term borrowing. Also payments for engineering services and other costs incurred before the construction contract is signed cannot be paid until construction is 25% complete. The impact is shown by the case in Kansas City where, on a $130 million program, short-term interest at 7% comes to $6.58 million. A significant fraction of this amount, if not the entire amount, could be eliminated from the municipal expenditures by a different payment schedule.

2.4 Resources Are Inadequate for Planning.

The federal government has spent roughly $40 million between 1956 and 1968 on comprehensive river basin studies. In addition, a little less than $1 million has been granted to state, interstate, and local agencies to develop water quality management plans for river basins. At present there are 12 comprehensive river basin planning programs under way under Section 3c of the Act. These plans would be suitable for the comprehensive river planning as indicated in Appendix 2 on Planning. Two of these are scheduled for completion during CY 1970.

There are 24 water quality management planning studies under way under Section 3a of the Act, seven of them completed. These are of a gross nature and would not help in comprehensive river basin planning except to provide a starting point. Twelve Type I framework studies administered by the Water Resources Council and partially funded by FWQA are under way but only one is completed. These are surveys and not any kind of plan. Type II coordinated comprehensive detailed surveys are likewise administered by the Water Resources Council and partially funded by FWQA. These studies very closely approach the requirements for a comprehensive river basin plan as defined by Section 8 of the Act. There have been 15 Type II studies funded and five of them completed. It is clear that only a very small portion of the country is being planned and even a smaller fraction has been planned. There are perhaps only seven plans which can serve to fit directly into the Construction Grants Program. It is clear that an extensive amount of planning must be done both from the top down and at the local level. An estimate of the cost and the number of men required to carry out the planning deemed necessary for the Construction Grants Program is given in Table 5.4. In terms of manpower, roughly five staff are needed at FWQA Headquarters, four staff in each of the

TABLE 5-4

ESTIMATED COST OF DEVELOPING REQUIRED PLANS

	NO. OF MEN	NO. OF YEARS	MAN YEARS	$/MAN YEAR	$/ BASIN	$/ YEAR	TOTAL $
FWQA							
HEADQUARTERS	5	3	15	40K		200K	600K
NINE REGIONS	36	3	108	40K		1.44K	4.32M
STATES							
50 STATES	2/ STATE	3	6/ STATE	40K		4M	12M
MAJOR BASINS							
21					1.0M	7M	21M
SUB-BASINS							
217					500K	40M	110M
			TOTAL			52.6M	148M

nine FWQA regions, and an average of two in each of the 50 states. In addition, roughly $1 million is needed to plan each major river basin and between 100 and 500 thousand dollars is needed to plan each sub-basin. The total major basin planning then would be $7 million per year for three years and the sub-basin planning would required $40 million per year for three years. These funds are substantially greater than are being made available in the 3c program. Funding for 3c type plans was $2.5 million in FY70 and is palnned to be $2.9 million in FY7. The state programs presumably add equivalent amounts so that a total of $5 to 6 million in 3c type planning is available. Ten million dollars has been authorized and appropriated for FY60 and 70 and $12.5 million is requested for FY71 (increasing on a sliding scale to $30 million by FY75) for grants to states and to interstate agencies to assist them in their general control measures; some of these sums might be available for planning. In general, however, additional funds specifically for planning are needed.

2.5 Funds Provided by Other Agencies Are Not Coordinated

The Department of Housing and Urban Development (HUD), the Economic Development Administration (EDA), and the Farmers Home Administration (FHA), all have programs which interact with or impact on the Construction Grant Program. These and other federal agencies provide grants or other forms of assistance for planning which also can impact FWQA programs. Coordination amongst these federal agencies at both the national and local level is not complete. HUD and EDA require a certification from FWQA that sewer facilities are adequately engineered to interact with existing or planned sewage treatment facilities. However, sewage facilities supported by the Farmers Home Administration in the Department of Agriculture do not require this certification. Even in the case of HUD the certification becomes a pro forma act because the plans and specifications are complete before FWQA sees them.

FWQA regulations require that sewage treatment facilities be coordinated with a metropolitan plan which exists or is being developed for the area in which the facility is to be located. Generally these metropolitan plans have been produced under the Demonstration and Metropolitan Development Act of 1966. However there is no requirement in that Act that planning for facilities which might impact on sewage treatment plants be coordinated with FWQA. A case in point is the construction of separated sewers and storm drains in a community which are then tied into an older system in which the storm drains and sewage are combined facilities. The whole point of separating the new facility is lost by combining with the old facilities. In addition, it frequently is necessary to build oversized sewage treatment plans to account for water seeping into older sewers which FWQA has no responsibility or authority to replace or repair.

Coordination on local projects through a state is required through the State Clearinghouse under the Bureau of the Budget Circular A-95. However there is no companion requirement for all federal agencies to take appropriate coordinating action when notified of projects through the State Clearinghouse. These factors bring out other issues which restrict the capabilities of the FWQA to plan properly and provide funds to the greatest need and which in many cases have prevented local agencies from solving their main problems.

3.0 RECOMMENDATIONS

3.1 Develop Criteria for Applying Funds to the Greatest Need

Recommendation - that clear federal criteria be developed for setting priorities to apply funds to the areas of greatest need.

Appendix 1 describes the criteria which are recommended to be developed for setting priorities for fund allocation. These criteria will be of direct use in allocating the 20% funds the Administration-proposed legislation requests for use at the discretion of the Secretary. In addition these criteria can be used to allocate funds returned from states which cannot use them. The Administration proposes to shorten the time the states have to spend these funds from 18 months to 12 months. This will further improve the usefulness of these criteria. Furthermore, criteria can be used as guidance to influence the states to set adequate criteria based on needs. If the states do not follow the guidance and the state criteria are not improved it may be necessary in the near future to recommend legislation to have federal criteria applied uniformly throughout the country.

These criteria together with much larger and more certain appropriations will serve as incentives for the construction of cost-effective treatment works which will have the greatest impact on pollution control. Additional incentives for those communities which have a record of effective action and for those communities under enforcement actions will also be provided by these criteria. A National Action Plan and the stimulated comprehensive river basin planning will serve to focus and guide the incentives to the areas needed.

3.2 Consider Additional Provisions for Proposed Legislation

To solve the problems of inadequate, uncertain, and inequitable federal funding, the Administration has proposed S3468 (HR15903), S3470 (HR16022), S3471 (HR16028), and S3472 (HR16035) as described above. These measures, if passed, would go a long way toward relieving the problems cited. However, some additional provisions are recommended to be considered to strengthen the proposed legislation.

3.2.1 Increase Incentives to States

The Administration's bill would provide an extra 20% entitlement to each state that matches a federal grant with a grant of its own equal to 25% of the cost of construction. There are 15 such states now, as listed in Table 5-5.

Recommendation - that consideration be given to further modifying the allocation formula to take into account reported state needs.

Table 5-6 gives a list of the states by population, by reported needs for FWQA assistance, and by FY 1970 entitlement. The disparity between needs and entitlement is glaring. Furthermore, funds not needed by a state remain unused for 18 months (12 months in the proposed legislation). The population basis of the current entitlement formula has little meaning besides the fact that every person produces roughly equal amounts of sewage for treatment. Needs by each state are vastly different per capita because of vast differences in previous construction. If the needs for FWQA assistance by the states each year were validated by the FWQA regions in regard to regional and metropolitan plans, a linear-program type of resource allocation would provide each state with a fair share of the yearly appropriation. If this type of resource allocation could be conducted for the entire $4 billion program commitment, with yearly update and revision, an optimal allocation on the basis of need could be achieved.

A further approach has been described in "A New Approach to the Disposal of Liquid Waste" prepared for the Citizens Advisory Committee on Environmental Quality. This proposal envisions that each state would create a public corporation, or equivalent, with the right to issue revenue bonds and have the sole right to treat and dispose of liquid wastes within that state. This is the approach taken by the State of Maryland in its most recent act. All waste producers would "wholesale" waste to this corporation which would design, build, and operate all facilities including industrial waste, and which would collect revenue from each user. The corporation would have the right to build centralized plants wherever needed. Siting would be determined by giving full consideration to engineering factors, economic and scenic values of shoreline, and river ecology. The state would provide the corporation with a revolving fund to launch and maintain the liquid waste disposal program on the basis of fixed federal commitments over a period of years. It would be large enough to keep the program moving even though federal payments were delayed or perhaps temporarily smaller than anticipated. The fund would attempt to launch and commit financing for an entire state disposal program in a five-year period. It would provide funds for both planning and engineering. The federal government would require that the state set up such a corporation and federal funds

TABLE 5-5

STATES WHICH PROVIDE 25% MATCHING GRANTS

- CONNECTICUT
- DELAWARE
- INDIANA
- MAINE
- MARYLAND
- MASSACHUSETTS
- MICHIGAN
- NEW JERSEY
- NEW MEXICO
- NEW YORK
- OREGON
- PENNSYLVANIA
- RHODE ISLAND
- VERMONT
- WASHINGTON

TABLE 5-6

REPORTED NEEDS AND FY70 ENTITLEMENT BY STATE

States (by population)	1968 Population	Fall 1969 Needs for FWQA Assistance	FY 1970 Entitlement
California	19,221,000	$ 100,000,000	$ 65,554,900
* New York	18,113,000	1,290,681,200	69,935,200
* Pennsylvania	11,712,000	76,300,000	47,524,200
Illinois	10,974,000	128,862,798	42,257,100
Texas	10,972,000	20,327,857	40,479,900
Ohio	10,591,000	44,567,124	40,850,400
* Michigan	8,740,000	183,113,623	33,033,200
* New Jersey	7,078,000	48,701,480	25,717,700
Florida	6,160,000	37,728,978	21,551,200
* Massachusetts	5,437,000	32,000,000	21,983,500
North Carolina	5,135,000	5,653,460	19,881,000
* Indiana	5,067,000	34,682,181	20,042,500
Missouri	4,627,000	50,200,000	18,690,000
Virginia	4,597,000	20,195,417	17,302,800
Georgia	4,588,000	35,000,000	17,305,100
Wisconsin	4,213,000	94,324,180	17,130,900
Tennessee	3,976,000	23,818,086	15,815,700
* Maryland	3,757,000	48,800,960	13,550,900
Louisiana	3,732,000	7,604,570	14,515,900
Minnesota	3,646,000	18,900,000	14,928,100
Alabama	3,566,000	479,700	14,672,000
* Washington	3,276,000	17,086,410	12,528,700
Kentucky	3,229,000	3,082,386	13,625,800
* Connecticut	2,959,000	29,591,250	11,117,600
Iowa	2,748,000	6,326,224	12,203,800
South Carolina	2,692,000	12,000,000	11,028,700
Oklahoma	2,518,000	1,882,702	10,596,800
Mississippi	2,342,000	1,764,310	10,377,700
Kansas	2,303,000	3,892,883	9,839,400
Colorado	2,048,000	1,453,652	8,072,600
Arkansas	2,012,000	8,000,000	8,599,200
* Oregon	2,008,000	16,017,220	8,134,100
West Virginia	1,805,000	5,141,200	8,798,000
Arizona	1,670,000	1,829,080	6,327,100
Nebraska	1,437,000	3,521,850	6,668,500
Utah	1,024,000	238,540	4,655,900
* New Mexico	1,015,000	1,422,423	4,958,900
* Maine	979,000	19,737,725	4,981,500
* Rhode Island	913,000	7,000,000	4,341,100
Hawaii	778,000	4,000,000	3,398,600
Idaho	705,000	128,000	3,743,800
New Hampshire	702,000	11,222,400	3,369,200
Montana	693,000	305,000	3,714,500
South Dakota	657,000	2,485,581	3,815,600
North Dakota	625,000	134,222	3,626,400
* Delaware	534,000	710,350	2,541,600
Nevada	453,000	4,950,068	1,881,900
* Vermont	422,000	2,377,670	2,542,800
Wyoming	315,000	275,732	2,240,300
Alaska	277,000	3,000,000	1,637,900
District of Columbia			3,780,500
Guam			1,667,200
Puerto Rico			11,085,000
Virgin Islands			1,523,200

* Means State contributes at least 25% to locality with FWQA contributing up to 50%.

would flow only to such a corporation which would have all the essential powers and authority in order to be eligible for federal funds. The federal government would provide 20% of the total cost of all commitments made by the corporation during the first five years and 40% of service charges on those bonds issued during the first five years. In the event of delays or default on the part of the federal government an agreed-upon amount would accrue for later payment. The federal government, under this arrangement, would have only 50 entities to police and deal with instead of thousands of communities, and the total commitment of the federal government would be firmly established in the first five years. The users, that is, waste producers, would be required to use the public corporation and would be billed directly by the corporation. User charges would suffice to pay 50% of bond service charges. In addition, special charges and fees would be set for waste which place unusual demand on public corporation. Also industrial waste which cannot be handled by the public system would be pre-treated with the pre-treatment plant built by the industry using funds made available on loan from the public corporation. It is estimated by the Citizens Committee that a $10 billion national program could be financed by a $2 billion federal contribution over a five-year period. Of course, debt service payments would continue for the life of the bonds, that is, 35-or-so years.

Among the major attractions of this approach is its direct attack on all pollution, both industrial and municipal; hence the following recommendation:

Recommendation - that consideration be given to additional incentives to states, water basin regional compacts, and metropolitan areas to set up such corporate entities to treat all liquid wastes within that state, region, or area.

Not all states have the organizational and technical capability to undertake this effort at the present time. However, the initiative shown by Maryland could well be a model for the future.

3.2.2 Increase Incentives to Municipalities

A major incentive to municipalities, as well as to the states involved, would be the prompt repayment of reimbursables. A total of $322 million is currently owed and projects are underway amounting to an eventual total of $814 million. The most straightforward approach would be to request a $250 million additional appropriation from the current FY 1971 $1.25 billion authorization to start the repayment. Since this is likely to be considered inflationary, the following recommendation is made:

Recommendation - that consideration be given to taking 20% of the appropriation for payment on the reimbursables, in addition to the 20% allocated to states contributing at least 25% of cost of all projects and the 20% allocated on the basis of water pollution control problems and the ability to use funds.

This latter 20% is vitally needed at the discretion of FWQA to bring action directly at the most serious pollution needs. Payment on the reimbursable should not be done from the discretionary funds.

The 20% of the $1 billion reserved for the Secretary must be directed towards pollution needs. Where a community has a severe pollution need and particularly if it is under an enforcement act, the Secretary could provide additional funds to help correct the problem. Furthermore those communities which have moved promptly in the past to start correcting their problems could be provided additional incentives from the discretionary funds. In this manner incentives can be provided to communities without going to the straight 50% grant desired by the National League of Cities and U. S. Conference of Mayors. Furthermore the criteria to be established for priorities will include a factor for higher performance of the community so that those communities which have demonstrated adequate performance by starting on their pollution needs will gain assurance that their further needs will be met by federal grants. These criteria on a federal basis can influence the criteria on a state basis so the state priority lists will be able to reflect pollution needs and prior city performance. Representatives from municipalities were uniformly concerned that cities and towns which have delayed action previously should get higher federal and state funds in the future. That is, they would be rewarded by having waited to cure their pollution problems. There appears to be no way to guard against this, particularly in the case where there is a very large pollution problem and there is no way to solve it without extensive federal and state assistance to the community. However, appropriate use of discretionary funds can go far to alleviating these inequities. The following recommendation is made to insure that these funds get applied directly to the areas of need.

Recommendation - that consideration be given to providing the Secretary with explicit authority to allocate the discretionary funds to specific projects within needy states as he may determine.

There have been some 57 enforcement conferences called since 1957. Frequently very specific actions have been agreed upon or directed as a result of the conference. However, frequently the actions have been held up due to financial difficulties. This leads to the following recommendation.

Recommendation - that each enforcement conference be required to consider the sources of financing for the actions directed and report on arrangement made to finance the projects.

The next important aspect on providing incentives to communities is to make provisions for communities to sell their bonds. In his most recent testimony before the Senate the Secretary stated that, "the proposed establishment of an Environmental Financing Authority would enable most state or local bodies who are unable to meet water control standards because of financial limitations to borrow the necessary funds. Under the proposed Treasury Department bill, S3468, the Secretary of the Interior would identify communities unable to finance their local share of approved waste treatment grant projects and would guarantee timely payment of principal and interest on obligations sold to the Environmental Financing Authority. This new authority will provide communities unable to market bonds a mechanism to tap the capital market on favorable terms." However, many localities cannot sell bonds because of legal interest ceilings or debt limits. These restrictions could severely reduce the impact of setting up the Environmental Financing Authority. As the National League of Cities has pointed out, even if a city is completely commited to action to construct waste treatment facilities the city may not be a free agent to collect and dedicate the necessary resources to achieve this purpose. The local revenue raising capability and to some extent local spending choices are severely constricted by state law. For instance, states tell cities what taxes they may raise and insome cases how high they may be raised. States designate who may and who may not be taxed. States set limits on how much debt may be incurred and what interest rates may be paid and states sometime mandate services which must be performed and what people must be paid to perform them. One approach to relieve these problems is to have the states take over the disposal of liquid waste as recommended by the Citizens Advisory Committee on Environmental Quality. In this case the state must market the necessary bonds. A difficulty with this approach is that many states at this time do not have the organizational and technical capabilities to carry out such an undertaking, whereas most municipalities have some capability to construct and operate waste treatment plants.

Recommendation - that consideration be given to rules for the extension of capability by the Environmental Financing Authority to purchase bonds of municipalities on the basis of the need for the proposed treatment works.

Favorable or priority handling could be given to municipalities with a history of commitment or with a pending enforcement action.

3.3 Improved Payment Schedule

Recommendation - that a payment be made to the applicant agency upon signing the construction contract.

This payment should range from say 5% to 15% and should be enough to cover pre-contractual costs, engineering, and other services together with the initial costs of construction to near the 25% completion point. Further payments of 25% of the cost of construction at the 25%, 50, and 75% completion points would then leave 10 to 20% of the cost to be paid following the final inspection. Such a payment schedule could well eliminate the need for short term borrowing by the municipality. As noted above, requirements for short term borrowing by municipalities can be quite expensive; for instance, $6.58 million on a $130 million capital expenditure. Since municipalities are generally strapped for funds, elimination of the need for short term borrowing could be quite significant. These early payments would be made, of course, only on eligible expenses under the Construction Grants Program. However, there are many such eligible expenses which are incurred before construction and during the early phases of construction.

In addition to an early payment, or instead of early payments, an accelerated payment schedule could be made available to the communities. This is already within the scope of the regulations of funding payments. However, many communities are not aware that they can get a payment schedule other than 25, 50, and 75% schedule. During the pre-contractual period, communities should be made aware that they may apply for grants on a more timely schedule to avoid the need for short term financing. A rough estimate of the total amount of money that might be saved by all municipalities in the $10 billion Construction Grants Program is roughly half a billion dollars in short term financing charges.

3.4 Increased Funds and Manpower for Planning

Recommendation - that additional funds be requested for grants under Section 3c of the Act.

The total amount of funds to be requested cannot be determined accurately at the present time. A total of $2.9 million for grants to the states to pay 50% of the costs of the state comprehensive program has been requested for FY 1971. An additional $5.143 million has been requested for federal planning studies.

Recommendation - that the federal planning studies funds be increased by $1.64 million to provide four additional planning personnel in each Region, and five at Headquarters.

Recommendation - that a percentage of the Construction Grants funds themselves be applied to detailed engineering surveys and planning for regional and metropolitan treatment plants.

The Act provides under Section 8e that "construction grant funds shall be used exclusively to meet the costs of construction of the project for which the amount was paid. As used in this section the term 'construction' includes preliminary planning to determine the economic and engineering feasibility of treatment works, as well as the engineering, architectural, legal, fiscal, and economic investigations and studies." It has been observed that correctly carried out comprehensive planning results in plans which can be turned over to the Construction Grants Section for implementation. This implementation involves determining the precise nature of the project, precise location, the location and extent of interceptors, the type of treatment to be carried out and other factors relative to alternate strategies in handling the local and regional waste problem. Thus, Construction Grants funds could be used for planning the interface between comprehensive river basin planning and detailed engineering drawings of a specific project. Use of these funds would aid in regionalization and the construction of larger, more cost-effective projects. It is anticipated that as much as 2 to 5% of the Construction Grants funds could properly be prescribed for this type of planning, and these amounts could well be used in achieving more cost-effective treatment works in the long run. Total amounts to be spent in this way are difficult to estimate at this point but if $20M, $35M, and $40M were used in FY 71, 72, and 73 respectively, the total amount recommended in this paragraph would be $96M or 2/3's that estimated to be required in Table 5-4.

Annex 3 to this Appendix discusses the application of funds and state staff to water quality needs. It is concluded there that, with a few exceptions, a very gross analysis shows that funds and personnel assigned have a general correspondence among the 50 states relative to estimated generalized needs for controlling pollution. Developing similar comparisons and the requirement for manpower amongst FWQA regions is not as straightforward. Currently 360 positions are authorized in FY 70. This includes 90 additional positions over FY 69. A further increase of 150 positions is scheduled for FY 71. However, in the area of federal planning and studies 257 positions have been authorized for fiscal 69, 70, and 71. It is possible by saving manpower in reviewing processing applications that some of the new positions could be applied to planning and reduce the need for increased authorization in funds in the planning area. If all of the recommendations in the processing area (see Appendix 6) were carried out, perhaps 2 or 3 man years of effort in each region could be saved each year. This saving could presumably be applied to planning. In the process of reorganizing in the FWQA Regions to accomplish these river basin plans and make a more effective interface between planning and construction grants it may also be possible to save manpower and apply the savings to the planning area. However, within the scope of the study project we were not able to develop conclusive evidence as to the appropriate manpower levels for construction grants and planning personnel in the Regions and at Headquarters.

Annex C to this Appendix provides information developed by FWQA Headquarters on the Construction Grants Program, its staffing, its workload, and the breakdown of its workload by selected work practices.

3.5 Coordinate Funds Among Other Agencies

Recommendation - that grants for the purpose of planning and construction of sewers, treatment plants, and other liquid waste handling facilities be consolidated under one granting agency.

In the interim until this consolidation of activities can be accomplished, it is recommended that an inter-agency operating group be formed immediately at the national level with counterpart groups at the [federal] regional level to coordinate and administer all water quality-related grants now issued under FWQA, HUD, EDA, and FHA (Farmers Home Administration).

This group should perform the grant consolidation function pending Congressional action that consolidates federal grants or establishes a cabinet-level department responsible for overall environmental quality. It is suggested that this operating group at the regional level could function to coordinate these activities through the several state clearinghouses as an extension to the activities under Bureau of the Budget Circular A-95. The study team interviewed officials at the nine FWQA Regional offices plus offices in 18 state water pollution control agencies, more than 25 municipalities, counties, metropolitan or multi-county planning agencies, sanitary districts, river basin authorities, and more than 20 firms of consulting engineers. During these interviews the study team encountered unanimous agreement by officials in all categories that consolidation of federal assistance in planning and construction of sewers and waste treatment works is greatly needed. The present fragmented approach for issuing such grants for planning and construction requires that the applicant coordinate with more than one federal agency with regional offices located in differenct cities; often the different agencies have different funding policies and different financial or information requirements which lead to delays and excess cost.

Similar coordination problems exist at the state level. The currently used BOB Form 101 is inadequate for purposes of planning and coordination. Since the maintenance and operation of sewers has a direct impact upon plant operation, especially in controlling the strength and volume of waste that reach the plant, many problems in designing and sizing treatment plants are directly related to the problems of sewers. Sometimes treatment works are oversized by a factor of 3 or 4 to accommodate improper sewers, particularly due to the infiltration of ground water. Hence early and complete coordination on all facets of waste treatment is required.

ANNEX A TO APPENDIX 5
CONSIDERATION OF BILLS TO FINANCE THE CONSTRUCTION GRANTS PROGRAM

A number of bills have been submitted to the U. S. Congress in addition to the Administration bills described in the main text. S3687 would authorize $2.5 billion annually for fiscal years 72 through 76. The bill will also encourage, through paying 60% of the costs, development of projects according to river basin system.

S3688 has been introduced on behalf of the National League of Cities and the U. S. Conference of Mayors. This bill would establish a five-year program at $2 billion dollars a year for fiscal years 72 through 76. ($1.25 billion is urged as a FY 71 appropriation). The bill would also raise the federal grant from a minimum of 30% to at least 50% of local project costs. Furthermore, an increase of 20% would be made in the grants of those communities which have gone ahead in the past and have received only a low level of federal assistance.

S3181 would set up a system of effluent charges. Fifty percent of the revenue collected from the charges would be redistributed to the Nation's municipalities to assist them in the construction and maintenance of waste treatment facilities. The other 50% of the funds collected would be made available to regional water management associations. These associations would provide a comprehensive attack on the region's water pollution problems.

In the Water Pollution Control Federation Journal of February 1970, W. James Lopp II describes three alternative methods for financing. These are intended to assure federal funds for the Construction Grants Program to eliminate the uncertainty which the municipalities now face.

The first proposal is an alternative method of funding federal grants which is independent of yearly appropriations yet will represent full value of the federal share of each grant. FWQA would be authorized to submit requisitions to the Department of the Treasury which would be funded from the proceeds of the sale of the Second Liberty Bonds or some similar debt instruments. The limitations on the total amount of such requisitions to the Treasury would be established as the difference between the amount authorized by Congress and the actual appropriations which are provided in each fiscal year. This method of funding would provide an additional degree of certainty and continuity with respect to providing federal assistance to local government units.

A second proposal under consideration would establish two separate financing vehicles to handle the federal and local governmental units' shares. The local government would issue its own tax-exempt bonds to pay for its share of the cost of the facility. The federal government's share of the cost would be raised by obligations sold by the "Administration." The interest income received on such obligations issued by the Administration would not be exempt from taxation by the federal government. The obligations would be payable from annual appropriations which Congress would make to the Federal Water Quality Administration. The payment of the interest and principal on these obligations would not be guaranteed by a pledge of the faith and credit of the United States Government. Thus, the federal government would only be making a moral pledge to provide the necessary funds annually to prevent the Administration from defaulting in the payment of its outstanding obligations. In addition to the Administration selling its obligations to the general investing public, the legislation implementing this proposal would provide that the Secretary of the Treasury would have the right of first refusal to purchase the Administration's obligations from the proceeds of Second Liberty Bonds sales.

Such legislation would further provide that the Administration could sell separate and distinct obligations to the Secretary of the Treasury. The Secretary would be required to purchase such obligations when Congress fails to appropriate sufficient funds to service the Administration's outstanding debt or when Congress fails to appropriate the full amount authorized for any one year. If Congress authorized the expenditure of $1 billion for each of the next 10 years, but during any one of these years failed to appropriate the full sum the Secretary of the Treasury would be required to purchase the special obligations of the Administration to the extent of the difference between the amount authorized and the amount appropriated by Congress. This would provide an absolute degree of certainty as to the availability of funds to aid local governments in the establishment of pollution control facilities.

The third proposal which has been given the most consideration would provide that the local governmental unit would finance the entire cost of the facilities during the period of construction. The financing would be by short-term municipal notes. The interest paid on such notes would be exempt from federal taxation. During this period of short-term financing, no contribution would be made from the federal government to the cost of interest on the short-term note. Such interest cost would be carried by increasing the principal amount of outstanding debt at each renewal.

On completion of the facility, an independent federal agency to be created, known as the Clean Water Restoration Agency, would determine the share of the total cost to be borne by the Federal government. The Agency would then enter into a contract with the Federal Water Quality Administration which would provide the Agency with the necessary monies to service the principal and interest on the obligations which would be issued by it. The Agency would issue its own taxable bonds to provide the funds necessary to finance its share of the facility's cost. The proceeds from such an issue would be used to retire the portion of the outstanding short-term debt which would be allocable to the federal share. The remaining amount would be retired from tax-exempt bonds issued by the local governmental unit.

The bonds of the Agency would be secured by the payments made pursuant to a contract between it and the Federal Water Quality Administration. Since these payments would be subject to Congress' appropriating sufficient funds to cover the principal and interest cost, the Agency's obligations would not be included in the federal debt, since no pledge of the faith and credit of the federal government would be involved. Thus, the total amount of obligations issued by the Agency would not be subject to the artificial limitation established by Congress for the federal debt.

This proposal also would utilize the mandatory purchase of the special obligations by the Secretary of the Treasury. This backup procedure would establish the necessary element of certainty that has been lacking in past proposals. It would permit the establishment of long-range anti-pollution plans at both the local governmental level and the appropriate administrative level of the federal government. The plans would not be delayed by the unavailability of federal funds which were authorized but not appropriated.

All of these paragraphs are diagrammed on the accompanying tables to indicate their various provisions. Table 5-7 is a duplicate of Table 5-3 in the main body of the text and shows the features of the Administration Bills. Tables 5-8 through 5-10 and Figures 5-2 through 5-5 are self-explanatory. Figure 5-5 shows features of the proposal by the Citizen's Advisory Committee on Environmental Quality as described in the text.

A brief analysis has been made of the Administration's S-3687, 3688, and 3681 bills by the National League of Cities--U.S. Conference of Mayors. As noted by the National League of Cities, one major difference among the proposals is the level of need they project. The administration's proposal calls for a projected $10 billion dollar total need level. S-3687 and S-3688 proposals project a

$20 to $25 billion need level. The Administration has gone to great lengths to document the $10 billion figure in the most recent publication, "The Economics of Clean Water" as well as the annual report to Congress. In the absence of similar documentation by other groups it would appear that the Administration's numbers are valid at this time.

The Administration is candid about the limitations of the estimates; namely, they do not include significant funds for advanced waste treatment or for storm drain separation from sewer mains. Furthermore, it is expected that additional communities will identify further needs than have been reported through the state governments and which have not been included in the Administration's economic model. Therefore, without doubt the needs will grow. The increased needs will have to be treated at a later time. However, it does seem that the installation of secondary treatment for all sewered wastes within the next five years can be accomplished within the $10 billion figure.

The next significant controversy on these bills is in the level of assurance that federal funding will be made available. It would appear that the Administration's proposals are quite firm in its $4 billion obligation. Secretary Hickel has said that "pursuant to these agreements the federal government would be obliged to appropriate funds to satisfy obligations under these grant agreements just as the federal government must satisfy any other of its debt obligations. This change would assure communities of full federal support and allow planning and construction to proceed without the traditional gap between funds authorized and funds appropriated." If these provisions pass the Congress it would appear that the involved bonding policies suggested by Mr. Lopp would not be necessary.

S-3181 attempts to force municipalities and industries to decrease their effluent by charging a sufficiently high fee for it. Unfortunately this method has not been as successful in Europe as the bill's sponsors claim. The approach by the Citizen's Advisory Committee on Environmental Quality would appear to be a much more direct and effective attack on the total pollution problem, both industrial and municipal. It is only through this kind of approach that the major source of pollution, industrial wastes, can be brought under control without a piecemeal confrontation with industry after industry.

TABLE 5-7

ADMINISTRATION BILLS FOR FINANCING THE CONSTRUCTION GRANTS PROGRAM

- S3470 (HR16022), S3471 (HR16028), S3472 (HR16035)
  - Adequate Funding
  - Decreased Uncertainty
  - Effective Use of Funds

- $4B AUTHORIZED
  ". . . Grant Agreements or Otherwise . . ."

	FY71	FY72	FY73	FY74 (Report on Needs for FY75-59)
- OBLIGABLE	$1B	$1B	$1B	$1B ("No-Year" Funds)
- AUTH. FOR LIQUIDATION	AS REQ.	AS REQ.	AS REQ.	AS REQ.

- ALLOCATION TO STATES
  - 60% by Population (Except First $100M)
  - 20% by 25% Matching Policy
    - Addresses Incentive to States
  - 20% by Needs/Requirements
    - Addresses Application to Greatest Need, Basin Requirements

- PRIORITIES
  - "Financial Need" is Struck
  - Water Pollution Control Needs Retained

- PLANNING
  - Requires River Basin and Metropolitan Planning
  - Deletes 10% Bonus for Inclusion in Metro Plan

- ENVIRONMENTAL FINANCING AUTHORITY S3468 (HR15903)
  - Intent: Eliminate "Inability-to-Borrow" as Deterrent

TABLE 5-8 ALTERNATIVE LEGISLATIVE PROPOSAL: S-3681

IMMEDIATE COMMITMENT
OF $10 BILLION

FY	71	72	73	74	75	76
OBLIGABLE	$1½B	$2B	$2B	$2B	$2B	$2B

- 50% Federal Grant
- Revise Priority System to Emphasize Effectiveness
- Tie Enforcement to Availability of Financing
- Allow 20% Increase to Communities Who Have Gone Ahead With Low Level Federal Funds

TABLE 5-9 ALTERNATIVE LEGISLATIVE PROPOSAL: S-3687

AUTHORIZATION

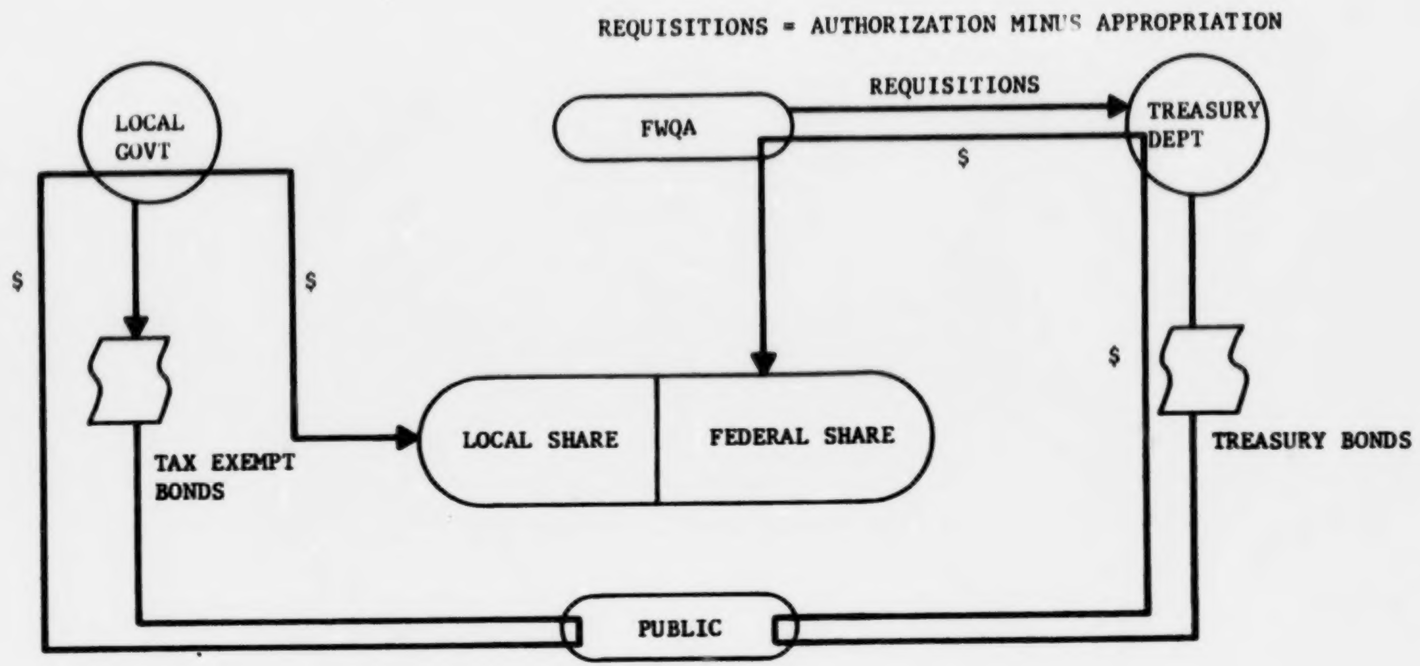
FY	71	72	73	74	75	76
AUTHORIZED	$1¼B	$2½B	$2½B	$2½B	$2½B	$2½B

- State Priorities Consistent with State Plans
- Pay Federal Funds up to 60% on Projects in Accord with River Basin Systems Designated by the Secretary.
- Reallocate Unused State Funds within 6 Months

TABLE 5-10 ALTERNATIVE LEGISLATIVE PROPOSAL: S-3181

Establish National Structure of Effluent Charges

- 50% of revenue would be redistributed to municipalities to assist in construction and maintenance of waste treatment facilities
- 50% of revenue would go to regional water management associations.

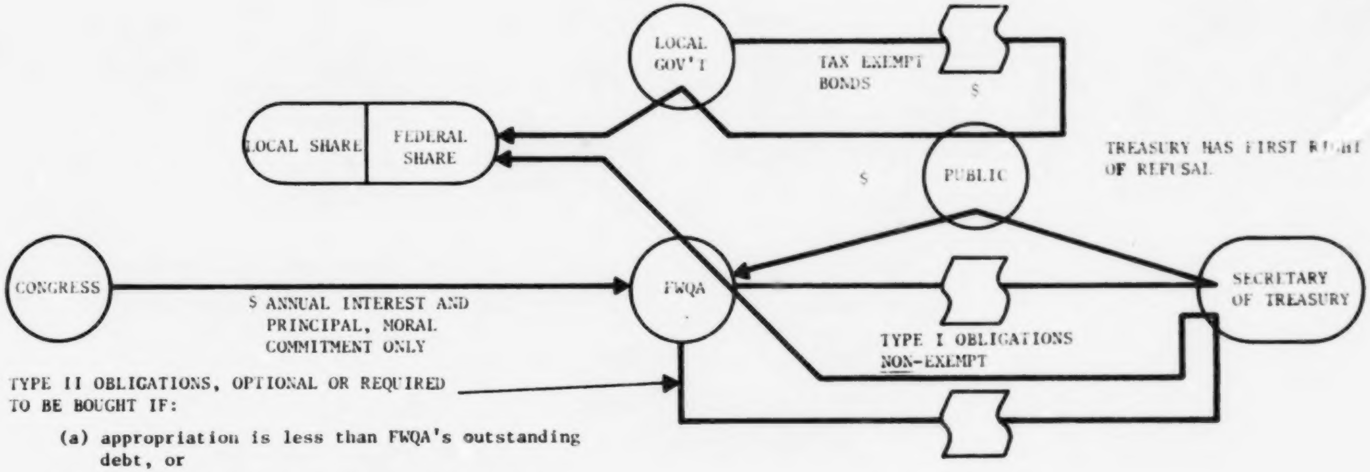

REQUISITIONS = AUTHORIZATION MINUS APPROPRIATION
LOCAL GOVT
FWQA
REQUISITIONS
TREASURY DEPT
$
$
$
$
TAX EXEMPT BONDS
LOCAL SHARE
FEDERAL SHARE
TREASURY BONDS
PUBLIC

(1) FWQA IS AUTHORIZED TO SUBMIT REQUISITIONS TO TREASURY DEPARTMENT.

(2) TREASURY FUNDS THE REQUISITIONS FROM SALES OF TREASURY BONDS.

(3) LIMITATION ON AMOUNT OF REQUISITIONS = ($ AUTHORIZED) - ($ APPROPRIATED), EACH FISCAL YEAR.

FIGURE 5-2
W. J. LOPP ALTERNATIVE I


LOCAL GOV'T
TAX EXEMPT BONDS
$
LOCAL SHARE
FEDERAL SHARE
$
PUBLIC
TREASURY HAS FIRST RIGHT OF REFUSAL
CONGRESS
$ ANNUAL INTEREST AND PRINCIPAL, MORAL COMMITMENT ONLY
FWQA
SECRETARY OF TREASURY
TYPE I OBLIGATIONS NON-EXEMPT

TYPE II OBLIGATIONS, OPTIONAL OR REQUIRED TO BE BOUGHT IF:

(a) appropriation is less than FWQA's outstanding debt, or

(b) appropriation is less than authorization

(1) LOCAL GOVERNMENT ISSUES OWN TAX-EXEMPT BONDS FOR ITS SHARE.

(2) FEDERAL SHARE RAISED BY OBLIGATIONS SOLD BY FWQA.

(3) INTEREST INCOME ON FWQA OBLIGATION WOULD NOT BE EXEMPT FROM TAXATION BY FEDERAL GOVERNMENT.

(4) FWQA OBLIGATIONS PAID FROM ANNUAL APPROPRIATIONS BY CONGRESS TO FWQA.

(5) PAYMENT OF INTEREST AND PRINCIPAL ON FWPCA OBLIGATIONS WOULD NOT BE GUARANTEED BY U.S. GOVERNMENT.

(6) FEDERAL GOVERNMENT MAKES ONLY A MORAL COMMITMENT TO PROVIDE FUNDS ANNUALLY FOR FWQA TO MEET OUTSTANDING OBLIGATIONS.

(7) SECRETARY OF TREASURY WOULD HAVE FIRST RIGHT OF REFUSAL TO PURCHASE FWQA OBLIGATIONS FROM PROCEEDS OF TREASURY BOND SALES.

(8) SECRETARY OF TREASURY COULD PURCHASE SEPARATE AND DISTINCT FWQA OBLIGATIONS AND WOULD BE REQUIRED TO:

(a) WHEN CONGRESS FAILS TO APPROPRIATE SUFFICIENT FUNDS TO SERVICE FWQA'S OUTSTANDING DEBT, OR

(b) WHEN CONGRESS FAILS TO APPROPRIATE FULL AMOUNT AUTHORIZED FOR ANY ONE YEAR.

FIGURE 5-3

W. J. LOPP ALTERNATIVE II

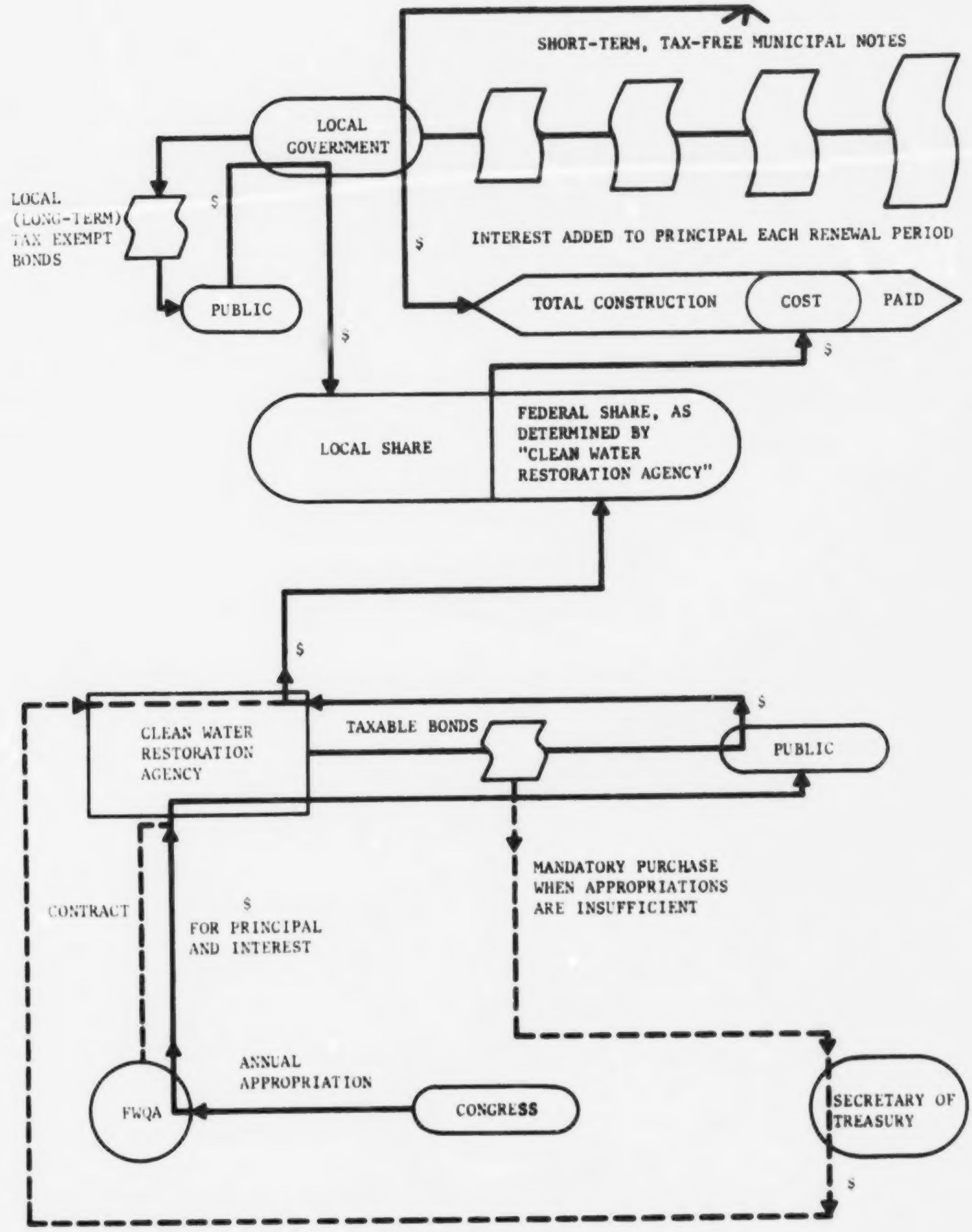
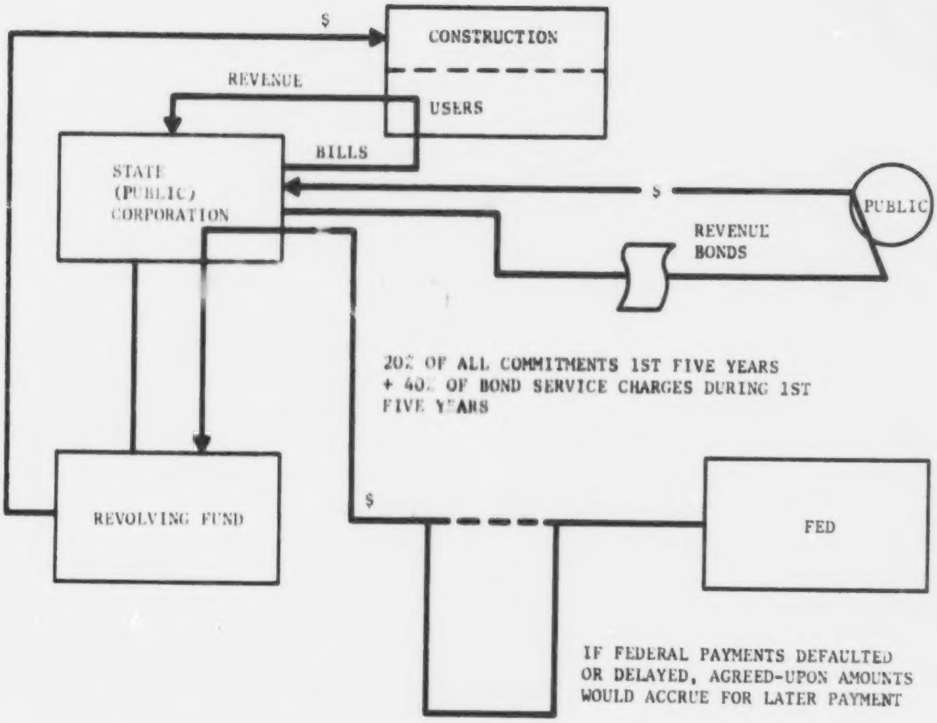

SHORT-TERM, TAX-FREE MUNICIPAL NOTES
LOCAL GOVERNMENT
LOCAL (LONG-TERM) TAX EXEMPT BONDS
$
INTEREST ADDED TO PRINCIPAL EACH RENEWAL PERIOD
$
PUBLIC
TOTAL CONSTRUCTION
COST
PAID
$
$
LOCAL SHARE
FEDERAL SHARE, AS DETERMINED BY "CLEAN WATER RESTORATION AGENCY"
$
$
CLEAN WATER RESTORATION AGENCY
TAXABLE BONDS
PUBLIC
MANDATORY PURCHASE WHEN APPROPRIATIONS ARE INSUFFICIENT
CONTRACT
$
FOR PRINCIPAL AND INTEREST
ANNUAL APPROPRIATION
FWQA
CONGRESS
SECRETARY OF TREASURY
$

FIGURE 5-4
W. J. LOPP ALTERNATIVE III


$
CONSTRUCTION
USERS
REVENUE
BILLS
STATE (PUBLIC) CORPORATION
$
PUBLIC
REVENUE BONDS
REVOLVING FUND
$
FED

20% OF ALL COMMITMENTS 1ST FIVE YEARS + 40% OF BOND SERVICE CHARGES DURING 1ST FIVE YEARS

IF FEDERAL PAYMENTS DEFAULTED OR DELAYED, AGREED-UPON AMOUNTS WOULD ACCRUE FOR LATER PAYMENT

(1) STATE (PUBLIC) CORPORATION REQUIRED FOR ELIGIBILITY FOR FEDERAL AID.

(2) CORPORATION HAS SOLE RIGHT TO TREAT ALL LIQUID WASTE IN STATE.

(3) COSTS ARE EQUALIZED ON A STATE BASIS.

(4) FOR A $3 BILLION 5-YEAR NATIONAL PROGRAM, INITIAL REVOLVING FUND REQUIREMENTS WOULD BE

- 13 MILLION IF ALL FEDERAL PAYMENTS WERE PROMPT
- 350 MILLION IF THERE WERE FOUR 3-YEAR MOROTORIA (ZERO FEDERAL CONTRIBUTION PERIODS) OVER 40 YEARS.

FIGURE 5-5
PROPOSED ALTERNATIVE BY THE CITIZENS ADVISORY COMMITTEE ON ENVIRONMENT QUALITY

ANNEX B TO APPENDIX 5
APPLICATION OF FUNDS AND STATE STAFF TO WATER QUALITY NEEDS

The rigorous determination of water needs is a task requiring the assimilation of a great body of statistical data. The pattern shifts continually, and the assessment of needs in satisfactory fashion remains an important problem.

It was desired to attempt a "horseback" look at the application of funds since inception of the federal grant program, and also to view present state staffing levels in terms of adequacy.

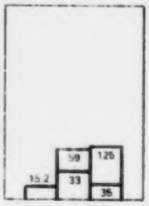
The following chart, Figure 5-6, was prepared representing both state staffs and investments since 1956. The basis was "Staffing and Budgetary Guidelines for State Water Pollution Control Agencies," T. R. Jacobi, R. A. Pravia and E. F. Ricketts, JWPCF 37:1, January 1965. (The system suggested by the authors was found to be used in some states today for supporting staff requests.)

The chart shows three bars for each state:

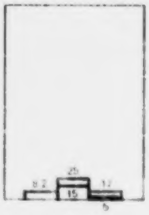
Left:	This bar shows the total number of state staff as reported in current State Program Plans.
Middle:	This bar shows the "minimum" and "desirable" levels according to Jacobi, et al.
Right:	This bar shows the total federal funds obligated since 1956.

The rationale is that Jacobi's personnnel prediction includes land area, water area, industrialization, population, and other factors, and a correspondence is assumed between total construction expenditures and personnel needs. Jacobi's model is imperfect in several ways which the authors point out. The assumption of correspondence between staff and construction is not overly strong, and reported state staffing levels are known to be only partially reliable because fractions of persons are used in some cases to exhibit a "respectable" total.

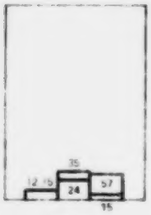
Nevertheless, it was quite easy to represent the data, and this was done as an "experiment" to see whether some gross patterns could be detected.



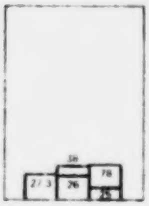
ALABAMA



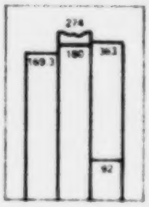
ALASKA



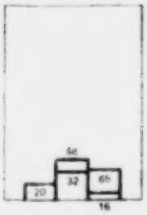
ARIZONA



ARKANSAS

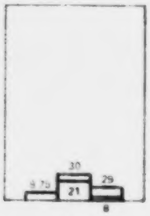


CALIFORNIA

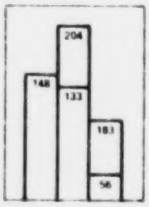


COLORADO

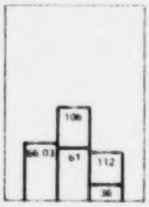
CONNECT



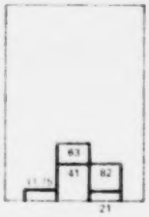
IDAHO



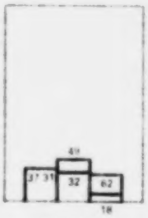
ILLINOIS



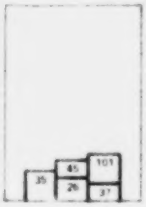
INDIANA



IOWA

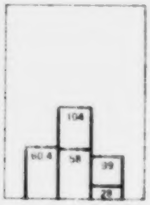


KANSAS

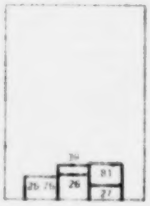


KENTUCKY

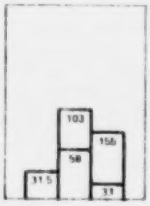
LOUISIA



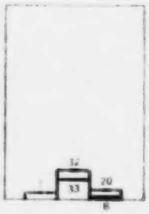
MINNESOTA



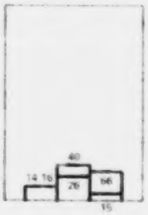
MISSISSIPPI



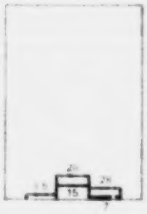
MISSOURI



MONTANA

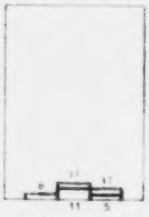


NEBRASKA

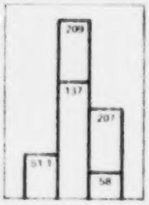


NEVADA

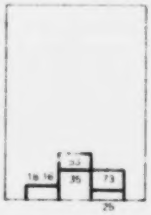
NEW HAM



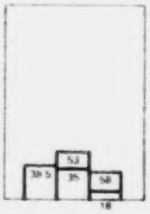
NORTH DAKOTA



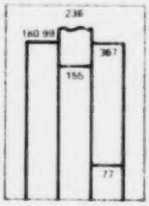
OHIO



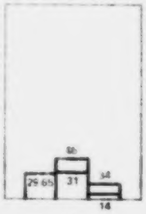
OKLAHOMA



OREGON

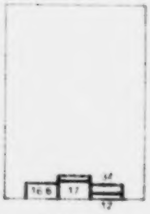


PENNSYLVANIA

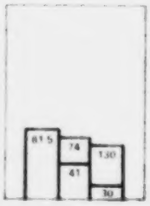


RHODE ISLAND

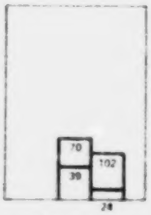
SOUTH CAR



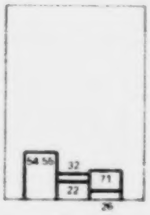
VERMONT



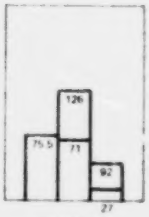
VIRGINIA



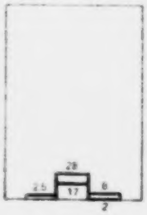
WASHINGTON



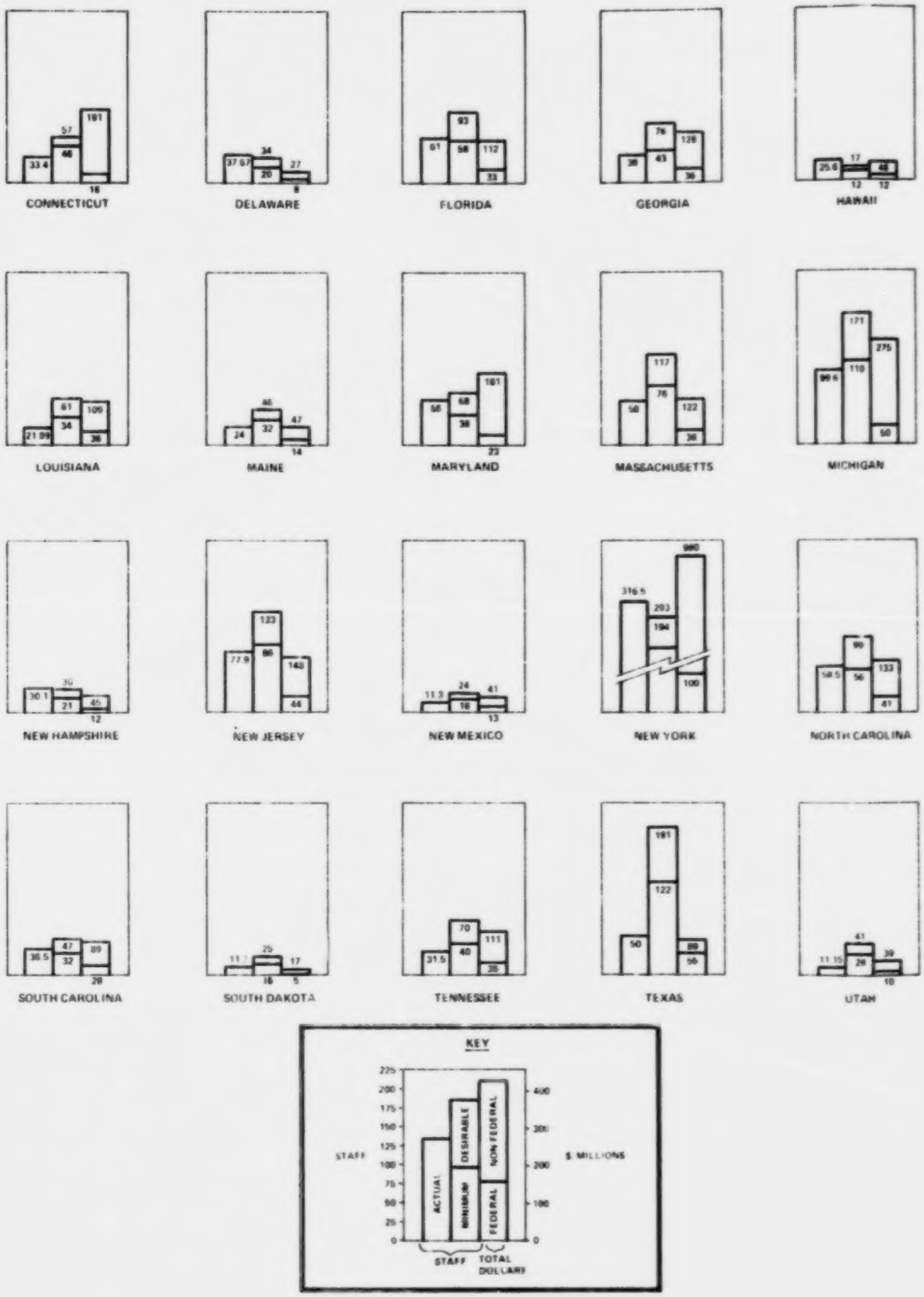
WEST VIRGINIA



WISCONSIN



WYOMING



ACTUAL
AND DES
AND TOTAL

*AS REPORTED TO FHWA BY STATES

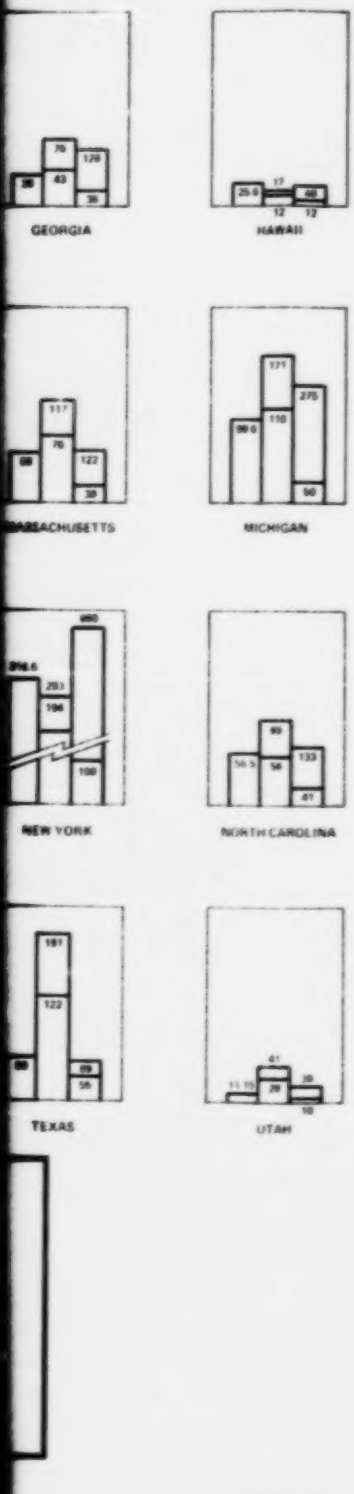


FIGURE 5-6

ACTUAL STATE STAFF* (LEFT) WITH MINIMUM AND DESIRABLE LEVELS PER JACOBIE, ET AL., AND TOTAL AND FEDERAL EXPENDITURES SINCE 1956

*AS REPORTED TO FWQA BY STATES

Preceding page blank

Indeed, there do appear to be some indications that speak for further evaluation:

(1) In a surprising number of states, the total expenditures are proportional to a value within the range of Jacobi's predicted state staffing requirements.

(2) Investment has been highest (proportionally) in New York and Connecticut.

(3) Investment has been lowest (proportionally) in Texas and Wyoming.

(4) The states of Illinois, Montana, Ohio, Rhode Island, South Dakota and Wisconsin show somewhat low (proportional) investment.

Conclusions:

(1) One should look further into the reliability of the comparisons, especially in

- three "Great Lakes" states in the "somewhat low" category
- Texas and Wyoming

(2) Except for the above, the "horseback" conclusion is that perhaps the program has performed fairly well to date in applying funds and staff to water quality needs.

Preceding page blank

ANNEX C TO APPENDIX 5

TABULATED DATA ON STAFF, FUNDING, AND WORKLOAD IN THE CONSTRUCTION GRANTS PROGRAM

This Annex presents a series of tables containing data on Construction Grants staffing, workload, and funding.

TABLE 5-11

REGIONAL STAFF BY CATEGORY

Construction Grants Regional Staff - By Category

	Number
Permanent	
Engineers	65
Administrative	52
Clerical	35
Temporary	
Clerical	10
Total	162

Category Distribution - Percentages

	Present	Optimum
Engineers	40%	45%
Administrative	32	25
Clerical	28	30

TABLE 5-12

CONSTRUCTION GRANTS ADMINISTRATION WORKLOAD STATISTICS

	1969 Actual	1970 Estimate	1971 Estimates No New Funds	1971 Estimates $800 Million	1971 Estimates $1.0 Billion	1971 Estimates $1.25 Billion
Active projects at start of Fiscal Year	2,464	2,636	3,056	3,056	3,056	3,056
Projects under construction	(1,350)	(1,504)	(1,674)	(1,674)	(1,674)	(1,674)
Projects not under construction	(1,114)	(1,132)	(1,382)	(1,382)	(1,382)	(1,382)
Workload during Fiscal Year						
Application reviewed	1,282	1,700	700	2,250	2,300	2,450
Plans and Specs reviewed	1,516	1,500	700	2,025	2,070	2,200
Construction starts	903	1,200	1,250	1,540	1,550	1,590
Inspectons	1,592	1,800	4,600	4,890	4,910	4,950
Plants completed	749	1,030	1,235	1,235	1,235	1,235
Performance audits	223	400	1,000	1,000	1,000	1,000
Sewer certifications	594	750	750	750	750	750
Estimated obligation of new obligational authority in fiscal year			--	80%	75%	70%
Resource Requirements						
Positions				436	441	451
Funds (millions)				6.198	6.248	6.348

TABLE 5-13

BASES FOR PROJECTIONS

Estimated rate of obligation

Average estimated size of project

Average estimated percent for grant participation

Projects placed under construction

- 20% - year of grant offer
- 70% - second year
- 10% - third year

Projects completed

- 75% - two years from grant offer
- 100% - three years from grant offer

Inspections - two per project per year

Performance audits - 50% of prior year completions

TABLE 5-14

FACTORS FOR DETERMINING REGIONAL ALLOCATIONS

40% weight - Ongoing workload (funded and reimbursables)

- Projects under construction
- Projects approved but not yet under construction

40% weight - Estimated new workload

- State allocations/average grant size for region

20% weight - Average size of project for region

Judgmental factors - Special regional problems
Distances
Relationships with States

TABLE 5-15

CONSTRUCTION GRANTS ADMINISTRATION
TENTATIVE DISTRIBUTION OF NEW POSITIONS

Location	FY 1970	FY 1971
Northeast	7	26
Middle Atlantic	13	23
Southeast	7	14
Ohio Basin	8	10
Great Lakes	12	16
Missouri Basin	13	18
South Central	7	14
Southwest	3	9
Northwest	2	5
Headquarters	18	15
Total	90	150

TABLE 5-16

REGIONAL AVERAGES OF PROJECT COSTS - FY 1969

Region	Cost of Project	Federal Grant
Northeast	$1,941,000	$173,000
Middle Atlantic	853,000	132,000
Southeast	1,194,000	306,000
Ohio Basin	1,204,000	429,000
Great Lakes	568,000	167,000
Missouri Basin	176,000	56,000
South Central	385,000	124,000
Southwest	873,000	279,000
Northwest	390,000	137,000
National Average	$772,000	$279,000

APPENDIX 6

PROCESSING

Page

1.0 INTRODUCTION 149

2.0 IMPROVING QUALITY OF APPLICATIONS 149

3.0 SIMPLIFICATION OF PROCEDURES 151

4.0 DELETE COST-INEFFECTIVE FUNCTIONS 153

5.0 IMPROVING INTER-REGIONAL CONSISTENCY IN TASKING AND MANPOWER ACCOUNTING 155

6.0 IMPROVE RELATIONS BY ADOPTING FWQA-WIDE POLICIES WHERE NEEDED 156

APPENDIX 6
PROCESSING

1.0 INTRODUCTION

Information on application processing and project work following grant offers was aggregated in five general recommendation categories:

- Improve the as-received quality of construction grant applications.
- Simplify certain procedures
- Delete or improve the glaringly cost-ineffective functions of processing legal/administrative costs and checking payroll records for contractor compliance with labor practices (long-standing, intense complaints).
- Increase the inter-Regional consistency of procedures for manpower/tasking/scheduling.
- Improve relations by adopting FWQA-wide policies where needed.

Recommendations, supporting information, and/or comments in each of the above categories follow:

2.0 IMPROVING THE QUALITY OF APPLICATIONS

Problem: The most significant cause for delay in processing grant applications is incomplete, poor quality applications and forms, as received by FWQA.

Although "users" of FWQA construction grants procedures--applicants, consulting engineers, state WPC officials--reported in all cases that delays by FWQA are not a problem, Regional personnel feel that a considerable amount of time could be saved if steps are taken--and maintained--to improve the as-received quality of grant applications. Mr. James MacDonald (CG Director, GLBR) estimated that processing manpower was reduced by 25 percent after "checklists" were issued showing common deficiencies that delay application processing.

Suggestions for improving application quality were:

Preceding page blank

2.1 Applicant/Engineer Handbook

A "Guide for Applicants for Federal Grants for Sewage Treatment Works under 33 USC 466 et seq." was issued in the mid-sixties by the Public Health Service (an unnumbered, undated form.) This guide, or an updated version, is not in use at this time. Since states, localities and consulting engineers suggested that a guide would be useful, it is suggested that a revision be developed, and that it should include graphic illustrations such as typical milestone charts, common ommissions from applications, frequent causes of delay, discussion of eligible cost determination, etc.

It is worth noting that the PHS Guide provides for authorizing payments in other-than-25% increments is described. The survey conducted in connection with the present study revealed that this provision is not well known to some applicants, and that the 25-percent increment schedule can cause difficulties in local financing.

It is doubtful that any separable savings can be identified from issuing a guide or handbook, although the process should be made to flow more smoothly.

The PHS Guide states "It is considered desirable that Applicants discuss the details of completing the Application with the State... prior to its submission to the state agency." Since FWOA does wish to be "brought in" during the planning process, a clear statement on how this should be done should be added to the admonition. Diagrams may be of great help.

2.2 Checklists

Checklists itemizing information needed to complete application review are now in use in some FWOA Regions, but not all of them. As stated earlier, the issuance of such lists was reported to reduce over-all processing time by one-fourth in the Great Lakes Basin Region.

Samples checklists from the Middle Atlantic Region, Great Lakes Basin Region, and Ohio Basin Region are presented in Annex A to this appendix. It is recommended that an all-region checklist be developed, and improved by including hints on how to supply certain troublesome items. An important goal is to minimize excessive data and discussion as well as to insure completeness. The Middle Atlantic Region has prepared a "typical" completed application package for inspection by applicants and others: the admonishment includes "this is all we need" (as well as a plea for completeness).

2.3 Pre-Application Meetings

The construction of a large waste treatment/interceptor system is a complicated, expensive undertaking. Improvements in procedures will not greatly ameliorate the planning/political/financial problems which represent a large investment in individual and group manpower. However, precisely because of this investment, measures should be taken to implement with due speed the product of it.

Pre-application meetings including state and federal officials, consulting engineers and applicants are serving in some regions to lubricate the application processing and project work shared by these principles. It is suggested that the practice be made nationwide and adopted as standard FWQA policy. While this will require FWQA staff time, it should save time by leading to higher-quality, more complete grant applications.

2.4 Minimum Format for Engineering Reports

It was reported that engineering reports including waste treatment works are not uniform in content when prepared for use in requesting funds from different federal agencies (FHA, EDA, HUD, and FWQA). This is understandable, since only FWQA has waste treatment plant construction as a major mission. Interagency cooperation is under development; the suggestion is to develop soon a uniform format for the waste treatment portion of all federal grants from any agency. The principal benefit will be in economies to applicants and consulting engineers since there will be less re-work of engineering reports.

3.0 SIMPLIFICATION OF PROCEDURES

Problem: Some procedural steps may be unnecessary or may be modified to allow more effective use of manpower.

3.1 Wage Determination Procedure

It is recommended that the Department of Labor approve a procedure whereby applicant may reference a file for wage determination rather than obtain actual figures from the Department of Labor. FWQA manpower saving is estimated to be 500 man-days/year and consulting engineers' saving as 2,000 man-days/year.

Under the present procedures, a wage determination is requested by the Regional office prior to advertising the project for bids. Since the wage determination is valid for only 120 days, the wage determination must be reissued if a project does not proceed as anticipated.

Therefore, it is necessary to process wage determinations for approximately 1.5 times the total number of applications received.

Under the proposed system, the Department of Labor could establish wage determinations quarterly and it would be incumbent on the contractor to obtain copies of the current wage determination from a Department of Labor Field Office and post them at the job site. This procedure reportedly would be a great saving for all federal agencies on all construction work.

This system is being used in some metropolitan areas; a wage determination is automatically reissued each 120 days.

The timing of wage determination requests can cause significant delay of projects. If a project does not have a valid wage determination when bids are to be opened, the project must be delayed until one can be obtained. This requires significant administration effort of the applicant, consulting engineers, regional offices, and state agencies to some extent.

3.2 Improvement of Forms

In general, it is advisable to re-examine periodically the forms used in government programs. Although it is not expected that great improvements would result (because FWQA procedures are reported to be excellent by those using them), it is in the interest of the government to "tune-up" the forms at intervals. Such a tune-up would include challenging the utility of all information now requested.

Some suggestions gathered by the team follow:

- Print forms on one side only, to ease the problem of making duplicates.
- Attachments should be labeled sequentially (1, 2, 3, ... or a, b, c, ...) as are income tax schedules.
- Instructions should be written more clearly.
- The size of print should be enlarged.
- All attachment forms to be submitted by the applicant should be represented in the main form.
- Decrease the time from inspection to payment by allowing contractor payments to serve as an estimate of percentage completion, for all by final payments.

- Include a line for showing state contributions.
- Validate or delete all acknowledgements.
- Eliminate the need for title opinions; the duly constituted authority will have eminent domain.
- Allow the use of titles rather than individuals as authorized representatives (presently the practice in some regions).

4.0 DELETE GLARINGLY COST-INEFFECTIVE FUNCTIONS

Problem: All FWQA Construction Grants administrators agree that processing legal costs, administrative costs and checking payrolls for contractor labor compliance are a source of wasted manpower which accomplishes little.

4.1 Processing Legal/Administrative Costs

It has been estimated that about 9 man-years/year are consumed in processing legal/administrative costs. A tabulation of legal/administrative costs of projects in the Northeast Region at Edison, New Jersey, office on which final payments were made in 1968 appears in a memorandum from Messrs. Ricci and Grossman to Mr. Sutton, which is shown in Annex B to this Appendix.

A letter prepared especially for this study by Mr. James MacDonald, Construction Grants Director, Great Lakes Basin Region, is quoted belows:

"Each construction grant project is eligible for federal grant participation for project costs connected with certain legal, administrative and fiscal fees that pertain to the federally eligible portion of the project. Over the years, repeated requests have been made by regional office personnel to develop an FWPCA policy, or regulations, or new legislation, to eliminate federal participation in such fees. The reason for desiring such elimination is completely connected with the inordinate amount of FWPCA manpower required to determine the amount of federal participation in such fees. In order to determine the amount of federal participation in the fees, it is necessary to itemize each legal, administrative and fiscal bill to determine whether the particular cost claimed for federal participation is an eligible item. For example, most attorneys submit lump sum legal bills to their municipal clients for services performed on a particular project. The bulk of such a legal bill is almost without exception ineligible for federal aid because the services performed are usually in connection with such ineligible items of work as land acquisition.

litigation, etc. In regard to administrative and fiscal items, it is also necessary for FWPCA to obtain itemized breakdowns on such bills in order to assess the individual eligibility of each item comprising the total bill. Many of these items are "nickel and dime" type expenditures for such things as rubber stamps, inking pads, hand towels, etc. The amount of time spent by staff in (1) obtaining a satisfactory itemized breakdown of legal, fiscal, and administrative bills is most consumptive and (2) is completely disproportionate to the amount of time spent on other important aspects of a construction grant project. This Regional Office spends a minimum of one man-year on reviewing legal, administrative and fiscal bills for eligibility. With the big program now in the offing, this figure can expect to be increased proportionately to the extent that at least several man-years in the next fiscal year could be saved by eliminating FWPCA participation in such supporting costs. At the last meeting of the Regional Construction Grants Chiefs in October, a representative of the Solicitor's Office indicated that it was his preliminary opinion that Federal participation in such fees could be eliminated at the discretion of the Secretary. It is urged that every effort be made to make the elimination in the participation of such fees a reality to insure the maximum utilization of available manpower to its greatest use."

The suggestion to allow a fixed percentage, perhaps 2% of the otherwise eligible project costs for legal/administrative costs has the drawback that in some instances money would be paid for no service, and in others would not be fully covered. Apparently, the most viable alternative is to eliminate these costs as eligible for federal support. A memo dated December 12, 1969, from the Associate Solicitor for Water Resources and Procurement including a proposed regulation change to accomplish the latter suggestion is presented as Annex C to this Appendix, as an indication of the present state of the effort to reduce the burden of this processing step.

4.2 Reviewing Payrolls for Contractor Labor Compliance

This type of activity is described and commented upon in the following statement prepared by Mr. James MacDonald, Construction Grants Director, Great Lakes Basin Region:

"Since 1961, the Construction Grants Program has had the responsibility for reviewing payroll documents of contractors and subcontractors on all construction grants projects. This responsibility entails the review of weekly payroll documents for such items as individual wage rates, proper job classifications, authorized payroll deductions, apprentice certifications, etc. The payroll documents are required to be submitted to the FWPCA Regional Office for review. The reviews are required under FWPCA's responsibilities in discharging certain aspects of the Labor Standards Provisions that are a part of each construction contract under our program. A copy of the Labor Standards Provisions is attached. In the many years that these payroll reviews have been conducted by FWPCA, the amount of errors in the form of employee wage underpayments, job misclassifications, etc., have been so few as to be practically negligible. Accordingly, the effort put to such reviews by FWPCA staff has been correspondingly cursory. Nevertheless, even with such a cursory review, a disproportionate amount of FWPCA manpower is utilized in such tasks as receiving and opening the payroll packages, shifting them from the mailroom to the desks of staff responsible for reviewing the payrolls, repackaging payrolls for submission back to the individual project sponsors and related internal office manpower required to just physically process these payroll documents. It is my understanding that efforts are now underway within FWPCA to shift the responsibility for all payroll reviews back to the Department of Labor. The Department of Labor has the overall responsibility for enforcement of the Labor Standards, but has delegated this responsibility to other agencies such as ours. In view of the tight manpower situation in FWPCA, it is urged that vigorous action be taken to relieve FWPCA of all payroll review functions as rapidly as possible. FWPCA would loose nothing by this move, but would gain in the Great Lakes Regional Office at least one full man-year by such a move."

Mr. MacDonald's estimate, which agrees with that of other Construction Grant administrators, is that approximately one man-year/ year can be eliminated (or more productively reapplied) in each regional office.

It was reported that the Department of Defense, and others, have established sections to deal with this single problem. This may cause difficulty in making an exception for FWQA.

If the function cannot be eliminated as an FWQA responsibility, a standard procedure should be developed. "Spot-checking" in the field would at least eliminate the packaging/repackaging chore. Or, it may be possible to require the applicant or contractor to sign a certification that labor practices are to be complied with, and that payroll records are to be archived for three years. Evidently, violations are reported by the aggreived with great reliability.

5.0 IMPROVE INTER-REGION FWQA CONSISTENCY IN TASKING AND MANPOWER ACCOUNTING

Problem: The lack of a uniform system for accounting for manpower and tasks makes it nearly impossible to reliably perform nationwide adjustments to changes in program content or changes in federal funding levels.

Each FWQA Region uses its own set of office procedures, and accounts for project work in a unique way. Separate detailed office procedures obtained from the Great Lakes Basin Region, Middle Atlantic Region, and Northeast Region are essentially the same, but there are minor differences. Tasking is divided into 10 substantive areas in the Missouri Basin Region, and into 6 in the Northeast Region. The records kept by Missouri Basin Region on activities are impossible to relate to those kept by the Northeast Region. As a result, only gross approximations are possible when adjusting manpower at the national level.

There are no visible reasons for retaining flexibility in the matter of office procedures--the character of the work is essentially the same.

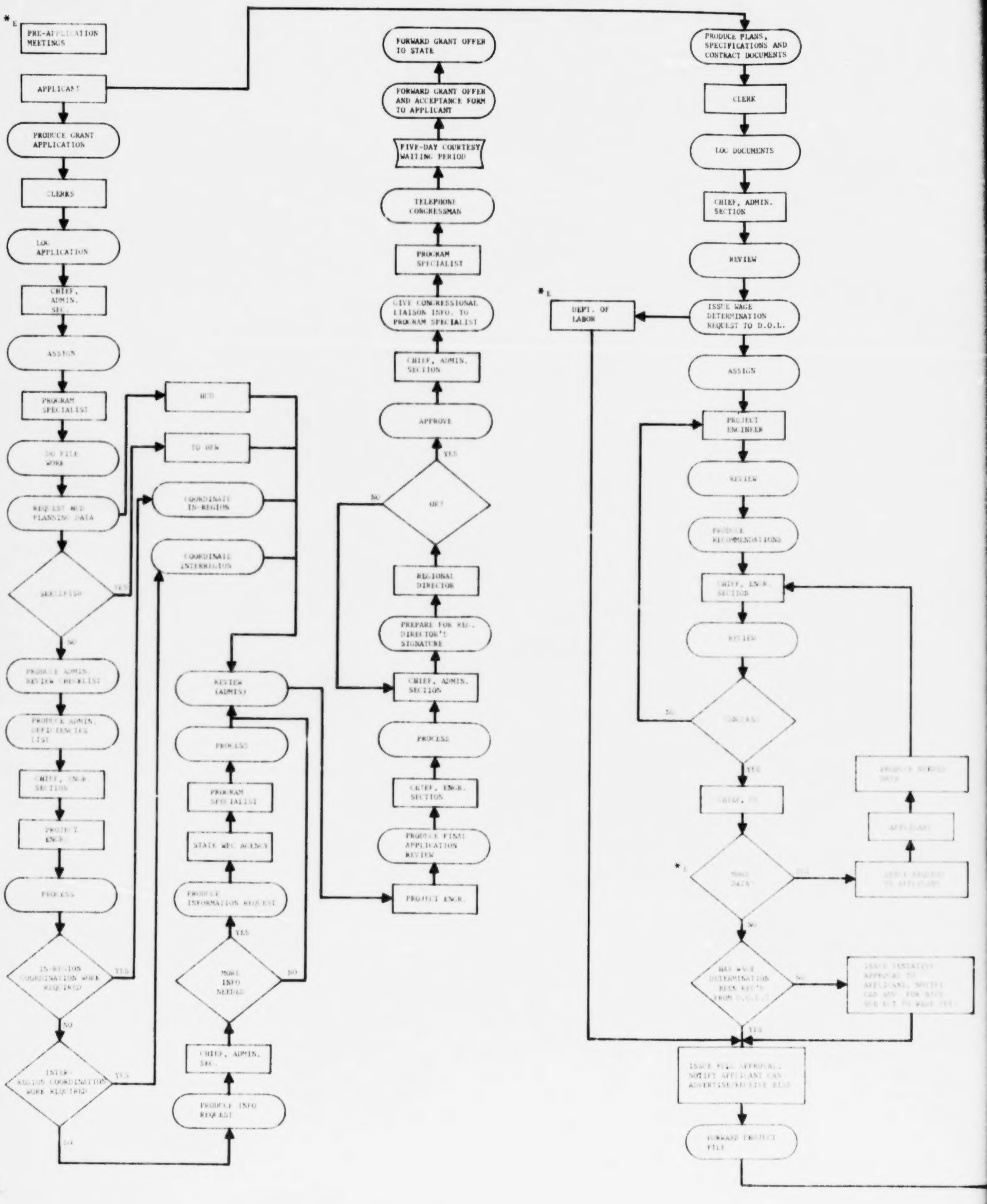
Early in the study, it was discerned that regional procedures are efficient, and that study time could be more effectively applied in other areas of the branch operations. Still, a partial dissection of one set of procedures for the Middle Atlantic Region was accomplished and appears as Figure 6-1.

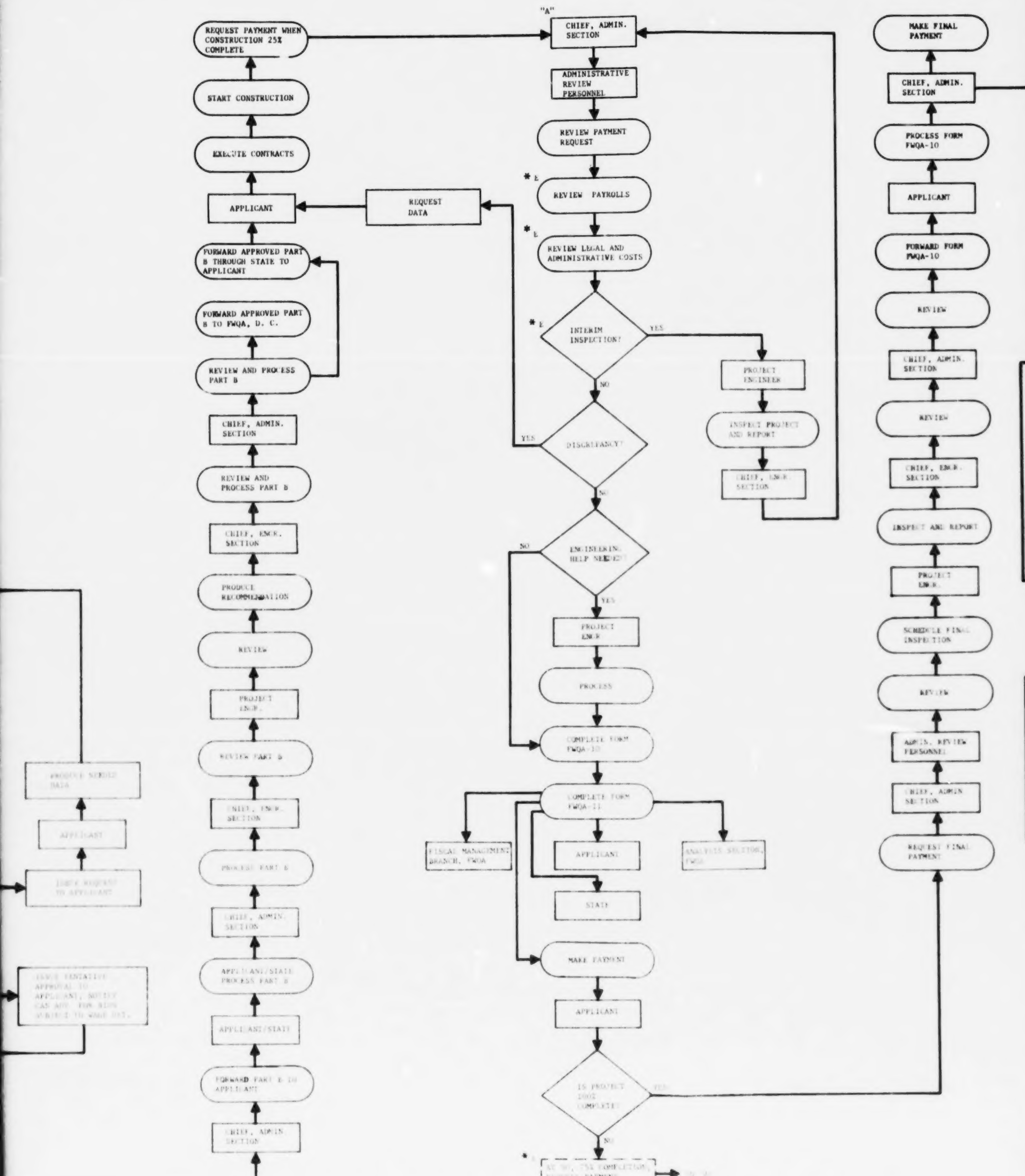
Great consistency and uniformity among the regions could be achieved by the following studies and actions:

- Obtain a commitment to establish uniform procedures and records systems in all FWQA regions
- Dissect each present regional procedure, and produce a single tentative procedure which will serve all regions.
- Conduct a 3-6 month study using appropriate techniques to determine the requirements of each procedural element (man-hours and elapsed time) in the tentative procedure.
- Aggregate functions and install a records system that will allow simple association of manpower with work to be done.
- Establish the uniform regional procedure, and the related management information inputs, outputs, and decision parameters.

6.0 IMPROVE RELATIONS BY ADOPTING FWQA-WIDE POLICIES WHERE NEEDED

Problem: With continued growth, policy flexibility causes increasing problems. Regions must deal with national engineering firms, with states, and with the public in equitable fashion.


*E
PRE-APPLICATION MEETINGS
APPLICANT
PRODUCE GRANT APPLICATION
CLERKS
LOG APPLICATION
CHIEF, ADMIN. SEC.
ASSIGN
PROGRAM SPECIALIST
DO FILE WORK
REQUEST HUD PLANNING DATA
YES
NO
PRODUCE ADMIN. REVIEW CHECKLIST
PRODUCE ADMIN. DEFICIENCIES LIST
CHIEF, ENGR. SECTION
PROJECT ENGR.
PROCESS
IN-REGION COORDINATION WORK REQUIRED
YES
NO
INTER-REGION COORDINATION WORK REQUIRED
YES
NO
HUD
TO HEW
COORDINATE IN-REGION
COORDINATE INTERREGION
REVIEW (ADMIN)
PROCESS
PROGRAM SPECIALIST
STATE WPC AGENCY
PRODUCE INFORMATION REQUEST
YES
MORE INFO NEEDED
NO
CHIEF, ADMIN. SEC.
PRODUCE INFO REQUEST
FORWARD GRANT OFFER TO STATE
FORWARD GRANT OFFER AND ACCEPTANCE FORM TO APPLICANT
FIVE-DAY COURTESY WAITING PERIOD
TELEPHONE CONGRESSMAN
PROGRAM SPECIALIST
GIVE CONGRESSIONAL LIAISON INFO. TO PROGRAM SPECIALIST
CHIEF, ADMIN. SECTION
APPROVE
YES
NO
OK?
REGIONAL DIRECTOR
PREPARE FOR REG. DIRECTOR'S SIGNATURE
CHIEF, ADMIN. SECTION
PROCESS
CHIEF, ENGR. SECTION
PRODUCE FINAL APPLICATION REVIEW
PROJECT ENGR.
PRODUCE PLANS, SPECIFICATIONS AND CONTRACT DOCUMENTS
CLERK
LOG DOCUMENTS
CHIEF, ADMIN. SECTION
REVIEW
*E
DEPT. OF LABOR
ISSUE WAGE DETERMINATION REQUEST TO D.O.L.
ASSIGN
PROJECT ENGINEER
REVIEW
PRODUCE RECOMMENDATIONS
CHIEF, ENGR. SECTION
REVIEW
NO
YES
CHIEF, ED
*E
MORE DATA?
YES
PRODUCE NEEDED DATA
APPLICANT
ISSUE REQUEST TO APPLICANT
NO
HAS WAGE DETERMINATION BEEN REC'D FROM D.O.L.?
NO
ISSUE TENTATIVE APPROVAL TO APPLICANT, NOTIFY CAN ADV. FOR BIDS SUBJECT TO WAGE DET.
YES
ISSUE FULL APPROVAL; NOTIFY APPLICANT CAN ADVERTISE/RECEIVE BIDS
FORWARD PROJECT FILE



REQUEST PAYMENT WHEN CONSTRUCTION 25% COMPLETE
START CONSTRUCTION
EXECUTE CONTRACTS
APPLICANT
REQUEST DATA
FORWARD APPROVED PART B THROUGH STATE TO APPLICANT
FORWARD APPROVED PART B TO FWQA, D. C.
REVIEW AND PROCESS PART B
CHIEF, ADMIN. SECTION
REVIEW AND PROCESS PART B
CHIEF, ENGR. SECTION
PRODUCE RECOMMENDATION
REVIEW
PROJECT ENGR.
REVIEW PART B
CHIEF, ENGR. SECTION
PROCESS PART B
CHIEF, ADMIN. SECTION
APPLICANT/STATE PROCESS PART B
APPLICANT/STATE
FORWARD PART B TO APPLICANT
CHIEF, ADMIN SECTION
PRODUCE NEEDED DATA
APPLICANT
ISSUE REQUEST TO APPLICANT
ISSUE TENTATIVE APPROVAL TO APPLICANT, NOTIFY CAN ADV. FOR BIDS SUBJECT TO WAGE DET.
"A"
CHIEF, ADMIN. SECTION
ADMINISTRATIVE REVIEW PERSONNEL
REVIEW PAYMENT REQUEST
* E
REVIEW PAYROLLS
* E
REVIEW LEGAL AND ADMINISTRATIVE COSTS
* E
INTERIM INSPECTION?
YES
NO
PROJECT ENGINEER
INSPECT PROJECT AND REPORT
CHIEF, ENGR. SECTION
YES
DISCREPANCY?
NO
NO
ENGINEERING HELP NEEDED?
YES
PROJECT ENGR
PROCESS
COMPLETE FORM FWQA-10
COMPLETE FORM FWQA-11
FISCAL MANAGEMENT BRANCH, FWQA
APPLICANT
ANALYSIS SECTION, FWQA
STATE
MAKE PAYMENT
APPLICANT
IS PROJECT 100% COMPLETE?
YES
NO
* E
AT 50, 75% COMPLETION, REQUEST PAYMENT
TO "A"
MAKE FINAL PAYMENT
CHIEF, ADMIN. SECTION
PROCESS FORM FWQA-10
APPLICANT
FORWARD FORM FWQA-10
REVIEW
CHIEF, ADMIN. SECTION
REVIEW
CHIEF, ENGR. SECTION
INSPECT AND REPORT
PROJECT ENGR.
SCHEDULE FINAL INSPECTION
REVIEW
ADMIN. REVIEW PERSONNEL
CHIEF, ADMIN SECTION
REQUEST FINAL PAYMENT

* E = RECOMMENDATION-RELATED STEP

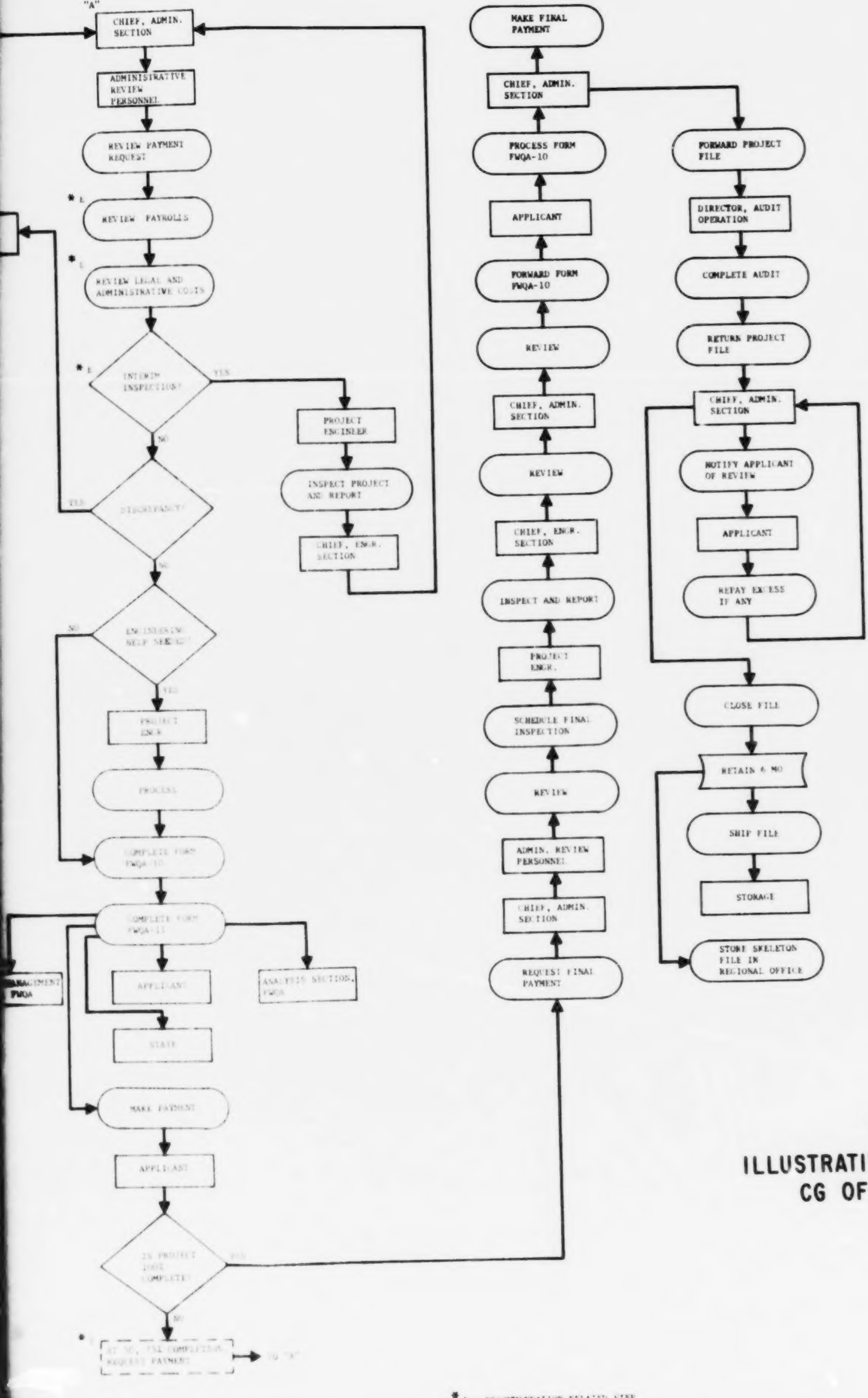

"A"
CHIEF, ADMIN. SECTION
ADMINISTRATIVE REVIEW PERSONNEL
REVIEW PAYMENT REQUEST
* R
REVIEW PAYROLLS
* R
REVIEW LEGAL AND ADMINISTRATIVE COSTS
* R
INTERIM INSPECTION?
YES
PROJECT ENGINEER
INSPECT PROJECT AND REPORT
CHIEF, ENGR. SECTION
NO
YES
DISCREPANCY?
NO
NO
ENGINEERING HELP NEEDED?
YES
PROJECT ENGR
PROCESS
COMPLETE FORM FWQA-10
COMPLETE FORM FWQA-11
MANAGEMENT FWQA
APPLICANT
ANALYSIS SECTION, FWQA
STATE
MAKE PAYMENT
APPLICANT
IS PROJECT 100% COMPLETE?
YES
NO
* R
AT 50, 75% COMPLETION, REQUEST PAYMENT
TO "A"
REQUEST FINAL PAYMENT
CHIEF, ADMIN. SECTION
ADMIN. REVIEW PERSONNEL
REVIEW
SCHEDULE FINAL INSPECTION
PROJECT ENGR.
INSPECT AND REPORT
CHIEF, ENGR. SECTION
REVIEW
CHIEF, ADMIN. SECTION
REVIEW
FORWARD FORM FWQA-10
APPLICANT
PROCESS FORM FWQA-10
CHIEF, ADMIN. SECTION
MAKE FINAL PAYMENT
FORWARD PROJECT FILE
DIRECTOR, AUDIT OPERATION
COMPLETE AUDIT
RETURN PROJECT FILE
CHIEF, ADMIN. SECTION
NOTIFY APPLICANT OF REVIEW
APPLICANT
REPAY EXCESS IF ANY
CLOSE FILE
RETAIN 6 MO
SHIP FILE
STORAGE
STORE SKELETON FILE IN REGIONAL OFFICE

FIGURE 6-1

ILLUSTRATIVE PARTIAL DISPLAY, CG OFFICE PROCEDURES

* R = RECOMMENDATION-RELATED STEP

6.1 Generate Uniform Policy

An effort was made to discern those areas of policy-making which all regions have in common.

It is evident that there are problem areas common to more than one and perhaps all regions that could be resolved by the issuance of national Federal Water Quality Administration Construction Grants policy. Although a Handbook of Procedures, which includes national policy, was issued to all regions and to state agencies in March of 1968, it is out of date now, according to Mr. Ralph Palange. "All Region" memoranda have been issued from time to time for the purpose of providing guidance on policy, but there are areas where more direction and guidance is needed.

The problem of the regions obtaining answers to questions of policy from Headquarters should be thoroughly considered. Because of a four to six week waiting period for reply, tendency in the field is to go ahead as best they can with what they have, making policy decisions and interpretations as the need arises without reference to Headquarters except on controversial issues. The excessively long chain of command through which a policy inquiry travels contributes significantly to the delay of policy question responses. Headquarters needs to re-examine its policy establishment machinery and set time standards for the handling of policy inquiries and related requests from the field.

The whole area of construction grants policy needs examination, clarification,consolidation and dissemnation. The legitimate desire to maintain flexibility of judgment has left the regions without policy direction and guidance in some broad and vital policy areas.

First, it is important to distinguish between areas of professional engineering judgment where flexibility is desirable, and broad policy areas where standardization of forms, files, reports, etc., may facilitate processing, produce economic benefits, and generally improve Construction Grants' operations in the field. One example was identified by the Chicago region. The Construction Grants files for the State of Iowa, formerly part of the Kansas City region, are arranged differently than the same files maintained for other states in the Chicago region, which now has jurisdiction. Consequently, there have been problems in using these files.

Policy memorandum, designed to interpret and supplement headquarters policy are developed and issued by the Regional Construction Grants offices. One example of the activity in this area is revealed by the number of such memorarda published by the Chicago region from

Preceding page blank

1967 to the present. There were 23 memoranda issued in 1967, 38 in 1968, 41 in 1969, and 5 so far for this year for a total of 107. Of particular interest is the fact that copies of these memoranda are not sent to Headquarters for review or even for information. It should be apparent that a review of these memoranda would pinpoint the difference of policy interpretation and implementation between the regions, and provide immediate information as to how Headquarters' policy is understood and carried out. It is basic and vital for Headquarters' managers to know, through a review of what the regions are doing in order to take corrective actions and to assess the need for additional policy direction and guidance. The collection and assembly of a file of copies of policy interpretations and implementations memoranda from all regions and the submission of such memoranda to Headquarters upon issuance seems imperative.

Due to increased workload and the lack of adequate staff in the Chicago region, the only policy on manpower allocations seems to be to concentrate on those projects that will produce the best results in the abatement of water pollution, with some responsibilities such as inspections, reviews, etc., being cut back. For example, a final construction inspection may be the only one made and the thoroughness of plan and specification reviews is reduced. In this connection, it seems important that work measurement practices are introduced. It is difficult, if not impossible, to determine and evaluate manpower allocation and utilization without some measure of the scope and elements of each step in the Construction Grant process. The problem of manpower allocation and the establishment of policy to assure optimum utilization should be high on the list of policy priorities.

Other areas where policy direction and guidance would be helpful include (1) the certification of waste treatment plant operators, (2) minimum degree of waste treatment,* (3) a definition of interceptor sewer,* and (4) the minimum requirements for inspections (condition of sewers as well as construction), reviews, and other factors related to the processing of applications and the assurance that Construction Grants funds will produce the best overall water quality improvement throughout the region that the money allocated will buy.

Also, a policy on bypassing (not just during construction) is needed, as well as a serviceable definition of "regional facility", and other "planning" terminology. A general policy on the procedure for exceptions may be worthwhile; certainly, the need to make exceptions is not a reason to avoid establishing policies.

---

*Discussed in Section 6.4 of this report.

6.2 Establish Adequate Construction Grants Headquarters Staff

A listing of present function of the Construction Grants Headquarters staff was prepared in accordance with the present organizational structure. The resulting set of functions, duties and responsibilities is presented in Annex D to this Appendix.

Revised organizational arrangements should be considered, in view of the recent increase in available funds and the anticipated additional workload. One grouping of activities under consideration would be (1) Grants Management Section, (2) Engineering and Design Section, (3) Operations and Maintenance Section, and (4) Evaluation and Resource (Management Data) Section. Also, two staff functions would be established to assist the Construction Grants Chief in preparing special materials and to coordinate with Planning Office.

6.3 Uniform Requirements for Certification of Treatment Adequacy

As the agency with the principal mission of water quality control, it is reasonable that FWQA "sign off" on applications for funds from other agencies which also fund waste treatment facilities. HUD and EDA now request such certification by FWQA but FHA does not.

The present sewerage program in the Farmers Home Administration is oriented primarily toward improving rural living conditions and to conserving funds wherever possible through economies of design and materials. It is conceivable that a treatment facility could be installed which would not meet water quality standards. It is the present practice to have the applicant obtain state review of all FHA projects; however, in some instances there are differences of opinion between the federal agency and the state agency as to required minimum treatment. For example, a totally funded FHA project might result in a primary treatment facility when the federal government was restricting FWQA grants to projects providing only secondary treatment. Also, under the present system, attempting economies of sewer construction could result in high infiltration rates and high maintenance costs, impairing effective operation of the sewer system and waste treatment facility.

It is believed that the requirement for certification of adequacy by FHA can be accomplished by administrative agreement--that legislative change will not be required.

6.4 Definition of Interceptor Sewers

There is a disagreement among Construction Grant administrators on publishing a FWQA policy on the definition of interceptor sewers.

A definition has been prepared by the Northeast region, and it is reportedly used by FWQA in most regions. However, it is not made available to applicants and consulting engineers as a firm representation of FWQA policy. That definition is presented in Annex E to this appendix.

The cogent argument in favor of the recommendation for a national policy is that better planning is possible. The "other side of the coin" has been represented as follows:

> "The Federal Water Pollution Control Act limits the participation in construction grants to waste treatment facilities including interceptor sewers and outfall sewers. Outfall sewers have been defined as the sewer from the treatment facility to the receiving stream, and there has been no problem of understanding the limits on this item. On the other hand, an interceptor sewer has been defined as a "sewer that cuts transversely a number of other sewers to intercept dry weather flow with or without a determined quantity of storm water if from a combined system." Also an interceptor sewer has been defined as "a sewer which receives dry weather flow from a number of transverse sewers or outlets and frequently additional predetermined quantities of storm weather (if from a combined system), and conducts such waters to a point for treatment or disposal.
>
> "It is a natural tendency for the engineer and the applicant to attempt to obtain the maximum amount of eligibility, therefore the matter must be decided by the Regional Office for each case at the time an application is submitted if the applicant requests participation on ineligible portion of the sewer system. Every community is different and its location in relation to water courses is unique. It is, therefore, impossible to draw sketches of classic interceptor sewer situations that will fit all cases without introducing limiting factors which would preclude some projects from reasonable participation. The Northeast Region has developed a guideline for eligibility of interceptors and pumping stations. This guideline has been informally used by many of the Regional Offices but has not been published for the reason that the publication of this would not eliminate the necessity to make eligibility determinations, but simply narrows the latitude for use of judgment by the Regional Office and gives the applicant and the engineer more ammunition to argue for additional eligibility. Many of the points in the guideline when taken out of context are misleading; however, they are pertinent when you consider the entire guideline. For example, one item from the guideline is that

> 'Under certain circumstances an eligible interceptor may discharge into collection system and later into a treatment facility.' This particular item taken by itself would justify any sewer as an interceptor sewer. Yet it is a statement that must be contained in a list of eligible sewers in order to give consideration to that sewer that connects one community to another community. This interpretation is essential to regionalization of treatment plants. Development of written guidelines must at best be restrictive in that there will be a natural tendency to stay within the limits detailed in the guidelines so there will be a tendency to not use judgment in the eligibility determination on an interceptor sewer. Another restraining feature is that at the present time most decisions on difficult eligibility determinations are made by the Regional Program Director or the Chief Engineer in the Regional Program Office."

6.5 Non-Uniform Policy on Review of Plans and Specifications

In all regions, there was considerable concern on the part of consulting engineers and state and local officials about the apparent duplication of effort in review of treatment works plans and specifications. It seems clear that a statement of policy by FWQA would be craftsmanlike.

However, this is not meant to suggest that a uniform policy be adopted in all regions, or even in dealing with separate states within a single region. These facts appear clear:

- No matter the competence of a given engineering firm and/or a state WPC agency, there are invariable issues to be settled.
- While detailed calculations need be only spot-checked, overall configuration must always be understood and approved by FWQA, because FWQA continues to be responsible for the portion of the investment.
- Even when spot-checking is varied in depth because of confidence in persons or organizations, the status of either is subject to change on short notice.
- Of all candidate areas for standardization, this is the least likely; it should be systematized, but not made uniform because a uniform system will become known, and inappropriate advantage will be taken.

- Some duplication is a necessity; however, judgment is exercised to keep the system reasonably cost effective.

The "statement" by FWQA, then would be a clear expression of these and other points which may be developed. The only alternative suggested is to obtain (possibly congressional) approval to accept the states' and/or professional engineers' certifications that Federal money has been used wisely in terms of plans and specifications.

6.6 Loss of Funding--OEO Violations on Unfunded Reimbursibles

Although it is a minor recommendation, it is worth noting that on unfunded reimbursibles applicants may lose federal funds if they permitted OEO violations in the absence of FWQA surveillance on large (greater than $1M) projects. States and municipalities should be advised of this fact.

6.7 Improving Relations via "Personalized" Communication

The wording of communications with applicants pertaining to contracts or otherwise having legal connotations can be partially standardized, while avoiding the undesirable aspects of printed forms, by use of standard tapes on magnetic tape typewriters sucn as the MTST. This permits addition of personalized data as appropriate to each specific application. Figures 6-2 and 6-3 present "before-and-after" samples of letters prepared by (1) filling in blanks, and (2) magnetic tape typewriters. It should be added that the MTST (or other equipment) will require some training to allow effective use.

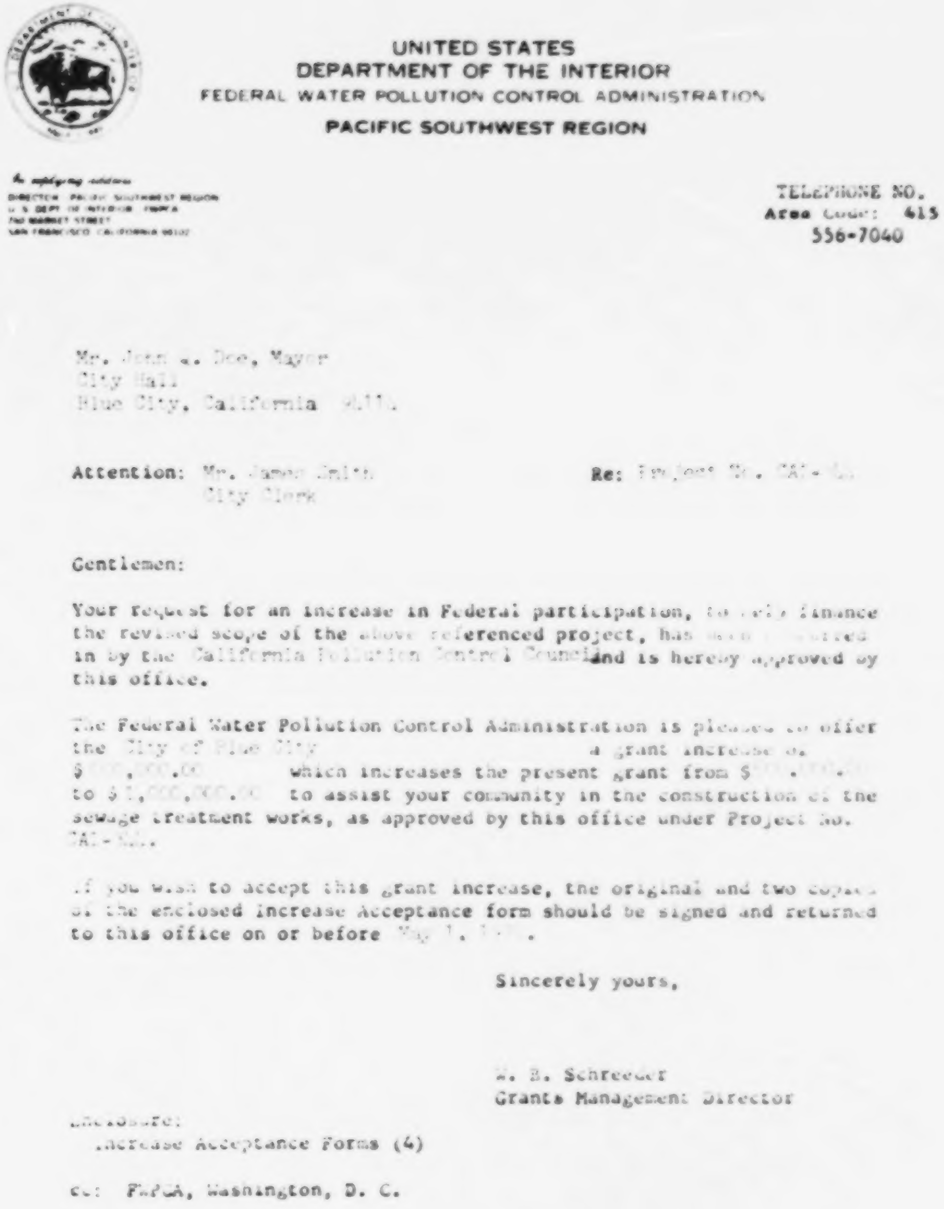
6.8 Other Policy Recommendations

The following candidates for FWQA policy are presented without comment:

6.8.1 Allow the construction of interim facilities (such as primary treatment) that are part of a well made plan, which later phases them out or incorporates them into permanent facilities affording higher degrees of treatment.

6.8.2 Consider adopting uniform policy on equipment performance guarantees; regional differences may "force" adoption of an unwanted policy.

6.8.3 Continue and expand efforts to coordinate the water quality related activities of all Federal agencies.



UNITED STATES
DEPARTMENT OF THE INTERIOR
FEDERAL WATER POLLUTION CONTROL ADMINISTRATION
PACIFIC SOUTHWEST REGION

In replying address:
DIRECTOR, PACIFIC SOUTHWEST REGION
U. S. DEPT. OF INTERIOR, FWPCA
760 MARKET STREET
SAN FRANCISCO, CALIFORNIA 94102

TELEPHONE NO.
Area Code: 415
556-7040

Mr. John Q. Doe, Mayor
City Hall
Blue City, California [illegible]

Attention: Mr. James Smith
City Clerk

Re: Project No. CAl-[illegible]

Gentlemen:

Your request for an increase in Federal participation, to help finance the revised scope of the above referenced project, has been concurred in by the California Pollution Control Council and is hereby approved by this office.

The Federal Water Pollution Control Administration is pleased to offer the City of Blue City a grant increase of $[illegible],000.00 which increases the present grant from $[illegible] to $1,000,000.00 to assist your community in the construction of the sewage treatment works, as approved by this office under Project No. CAl-[illegible].

If you wish to accept this grant increase, the original and two copies of the enclosed Increase Acceptance form should be signed and returned to this office on or before May 1, [illegible].

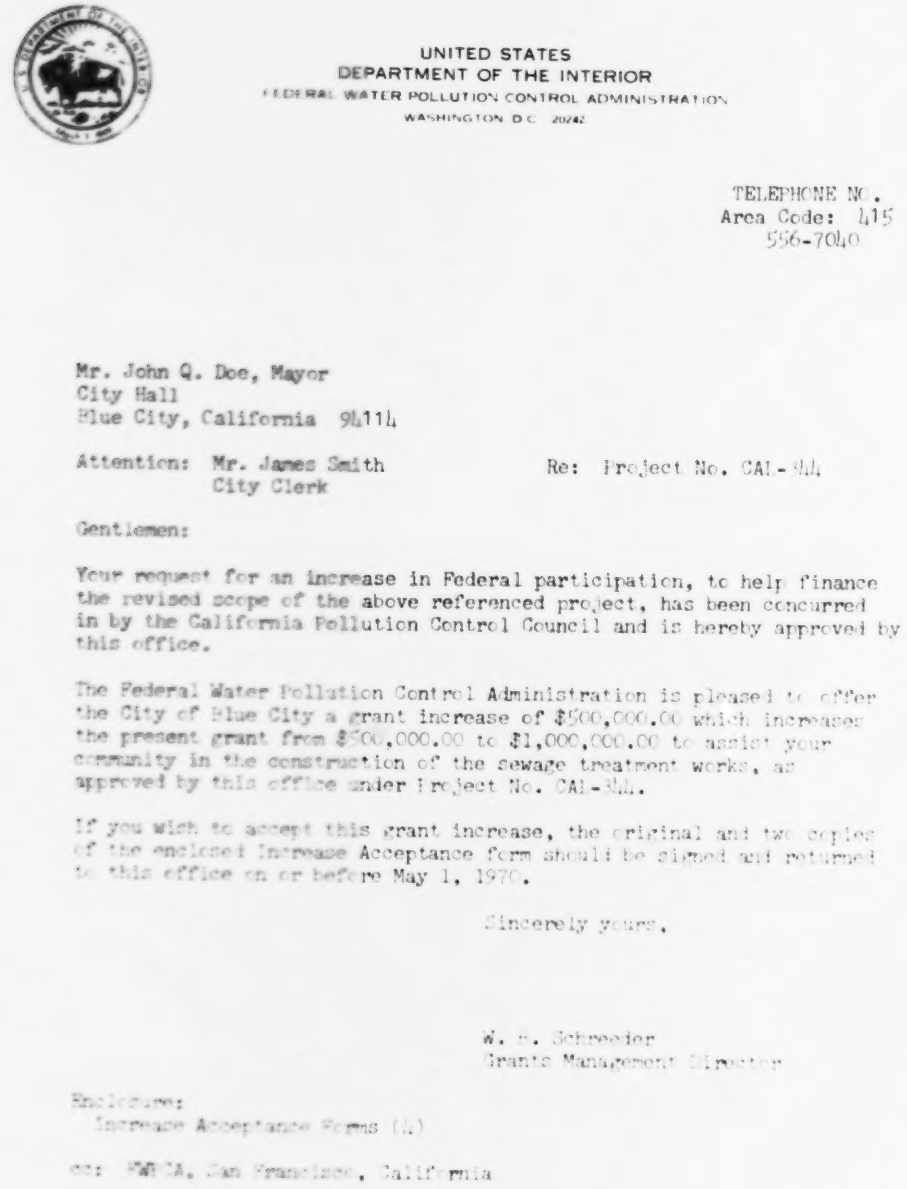
Sincerely yours,

W. B. Schroeder
Grants Management Director

Enclosure:
Increase Acceptance Forms (4)

cc: FWPCA, Washington, D. C.

FIGURE 6-2
EXAMPLE OF "FILLED-IN" FORM LETTER



UNITED STATES
DEPARTMENT OF THE INTERIOR
FEDERAL WATER POLLUTION CONTROL ADMINISTRATION
WASHINGTON D.C. 20242

TELEPHONE NO.
Area Code: 415
556-7040

Mr. John Q. Doe, Mayor
City Hall
Blue City, California 94114

Attention: Mr. James Smith
City Clerk

Re: Project No. CAL-344

Gentlemen:

Your request for an increase in Federal participation, to help finance the revised scope of the above referenced project, has been concurred in by the California Pollution Control Council and is hereby approved by this office.

The Federal Water Pollution Control Administration is pleased to offer the City of Blue City a grant increase of $500,000.00 which increases the present grant from $500,000.00 to $1,000,000.00 to assist your community in the construction of the sewage treatment works, as approved by this office under Project No. CAL-344.

If you wish to accept this grant increase, the original and two copies of the enclosed Increase Acceptance form should be signed and returned to this office on or before May 1, 1970.

Sincerely yours,

W. E. Schroeder
Grants Management Director

Enclosure:
Increase Acceptance Forms (4)

cc: FWPCA, San Francisco, California

FIGURE 6-3
EXAMPLE OF MAGNETIC TAPE TYPEWRITER "FORM LETTER"

6.8.4 Accelerate the accumulation of background to form the basis for a policy on disposal of sludge at sea, and on the digestion of sludge to be so disposed of.

6.8.5 Establish pre-construction rather than pre-award OEO conferences; contractors are reluctant to carry out the required investigations before award.

6.8.6 Investigate the ramifications of allowing FWQA funds to be used for repair of very old sewers; plants are sometimes oversized by a factor of 3 or 4 to accomodate infiltration.

6.8.7 If FWQA funds cannot be used for sewer repair, develop an information program to advise applicants and engineers of the diseconomies of allowing infiltration.

6.8.8 Develop background for a policy on funding outfalls from primary treatment plants in coastal areas.

6.8.9 Allow the use of Construction Grant funds for ocean surveys where they may affect investments in treatment plants of large scale.

6.8.10 Develop uniform national design guidelines for waste treatment works (see attached letter from Burns & McDonnell Engineering Co.).

6.8.11 Allow the use of FWQA funds for treatment of storm water from separate sewers in special cases.

6.8.12 Operation and Maintenance, and Training

Require designer of AWT plants to operate them for extended time (1-3 years) until proven.

Make operators manual and training mandatory for Construction Grants offer.

Through programs such as SCOPE and public-service TV spots, develop stimulus for attracting men into sanitary engineering and plant operation.

Establish subsidy for Operation and Maintenance to promote efficient utilization of high cost facilities.

Survey actual operational efficiency of existing plants.

Develop approaches to upgrade the status of treatment plant operators.

Develop a training seminar for Construction Grant applicants, consulting engineers, State WPC personnel.

Promote "public education programs" on TV, relating to water quality; use 10-second, 1-subject spots covering single ideas.

Develop a 2-week training seminar for Construction Grant personnel.

Develop a well-equipped "academy" for training plant superintendents and key operators.

ANNEX A TO APPENDIX 6

FORM LETTER FOR ADDITIONAL INFORMATION, APPLICATION PHASE MIDDLE ATLANTIC REGION

COPY COPY

RE: ____

TO: Director, State Agency WPC-________________

Attention: ____________________

In order for this office to complete processing of the construction grant application for the referenced project, it will be necessary for the Applicant to furnish the following:

1. A resolution of the Applicant's governing body authorizing a representative, by name and title, to execute and file the grant application.

2. A resolution of the Applicant's governing body authorizing a respresentative, by name and title, to execute and file the grant application and any other documents required to complete the project.

3. Comments and recommendations from the ________________________ ________________________________(area-wide planning agency) (designated SMSA Regional Planning Commission).

4. Outline of the Public Interest and Public Necessity for the Project (Section II-A).

5. Statement describing how the proposed project will meet criteria for determining the propriety of federal aid (Section II-B).

6. Classification of Applicant (Section III-A).

7. Description of Legal Authority for the construction, financing, and operation of the project (Section III-B).

8. Statement of Applicant concerning election requirements (Section III-C).

9. (Present) (and) (Design) population (of the Municipality) (served by the project) (Section III-D).

10. Design year for the project (Section III-D).

11. Sources, amounts and availability of funds to construct the proposed project (Section IV-A).

12. Revised sources, amounts and availability of funds to construct the proposed project reflecting the deletion of ineligible facilities and its appurtenant grant reduction (Section IV-A).

13. Section V-B of the application must be revised to reflect the deletion of certain ineligible portions of the project. The enclosed layout map has been marked in red to indicate the eligible portions of the project as determined by this office.

14. Date Applicant's funds will be available (Section IV-A).

15. A statement as to whether there are contracts with any other Federal agency contributing to the cost of this project (Section IV-C).

16. Description of operation and maintenance activities including itemized cost figures (Section IV-D).

17. Sources of funds for operation and maintenance activities (Section IV-D).

18. A layout drawing showing proposed sewerage facilities delineating items for which participation is requested.

19. (Preliminary) (Engineering Report) (Feasibility) (Study) (Report).

20. Engineer's statement that flood hazards have been considered and evaluated in the project design.

21. Description of the existing sewage treatment facility (facilities), delineating plant components and capacities.

22. The reserve capacity and degree of treatment provided by the existing plant.

23. A layout drawing of the Applicant's existing sewerage system.

24. Breakout of (total) (and) (eligible) estimated project (Construction) (Technical Services) (Legal and Fiscal) (Administrative) (Contingency) (Other) Costs (Section V-B).

25. Revised estimate reflecting the current eligible costs (Section V-B).

26. Schedule of project construction indicating all information requested on Section V-C.

27. Description of the (site)(sites) and location of right-of-way indicating present ownership and schedule of action to be taken for acquistion (Section V-D).

28. Name, address, and telephone number of Applicant's engineer (Section V-E).

29. Assurance of Compliance - DI Form 1350.

30. Compliance Report - Form (FWPCA-T128) (1351).

31. Waste treatment agreement between the Applicant and ____________ ______________________.
(Industry)

32. Waste treatment agreement between the Applicant and ____________ ____.
(Municipality or Authority providing treatment)

33. Statement of corrected (grant request) (cost) figures.

34. A copy of engineering agreement between the Consulting Engineer and the Applicant.

The above requested information should be forwarded in duplicate as soon as possible in order that we may expedite the processing of the application.

If you have any questions, please contact this office.

Sincerely yours,

Fred B. Grant, P.E.
Chief, Municipal Grants Branch

COPY

COPY

PROJECT NUMBER:______

CHECKLIST OF INFORMATION NEEDED TO COMPLETE APPLICATION REVIEW
GREAT LAKES BASIN REGION

(NOTE: After completing review, reviewer should circle necessary items and then refer to secretary for inclusion in guide letter.)

1. A statement of the current project status, including the anticipated bid opening date, the date contracts were awarded, the date construction will begin, and the date construction started.

2. A Civil Rights Assurance of Compliance, Form 1350, and a Civil Rights Compliance Report, Form 1351, did not accompany your application. The enclosed forms must be completed and returned.

3. A specific statutory citation of legal authority for construction, financing, and operation of the proposed project.

4. Whether an election is required before the project may be undertaken. If yes, has necessary action been taken? (N/A for Iowa projects)

5. Revised financial information (Section IV-A of the application). The grant request plus local financing must equal or exceed the total project cost.

6. Whether there are contracts with any other federal agency in connection with this project. If yes, please provide details.

7. A legal description of the proposed project site and (if applicable) a legal opinion on site title.

8. The project engineering contract or other basis of engineering fees.

9. The project engineering report.

10. A more specific statement of the public interest and public necessity for the project. (See Section II-A of grant application instructions)

11. A more specific statement of how the proposed project will meet criteria for determining the propriety of federal aid. (See Section II-B of grant application instructions.)

12. It appears that the project will affect ________________, an historic place. What action will be taken to preserve the historic or cultural nature of the site?

13. An itemization of the number and type of operation and maintenance employees presently employed and/or to be hired, a discussion of their qualifications that will be necessary to insure that the proposed project will operate at maximum design efficiency, and the amount for salaries, chemicals, utilities, and supplies, including those associated with laboratory operations, etc.

14. Design population and design year of the project.

15. A statement discussing excess flows arising from the entrance of ground and surface waters, municipal controls now being practiced or proposed, and alternatives to bypass of the treatment plant.

16. A discussion of flooding hazards and measures to be taken to protect the proposed project from possible flood damage.

17. A map or layout showing the location of proposed (sewers), (lift station(s)), and(force main(s)), and the sewage treatment plant for which federal aid has been requested. This map should also show the location of any existing sanitary sewers and exact points of any existing pollutional discharges.

18. An itemized construction cost breakdown.

(ITEMS 19-25 SHOULD BE REQUESTED WHEN BIDS HAVE ALREADY BEEN RECEIVED)

19. The project bid tabulation.

20. The bid proposal of the successful low bidder.

21. Evidence of bid advertising.

22. Signed construction contracts, if any.

23. Revised itemized construction cost breakdown based on bid prices.

24. Revised line item cost estimates for project technical services, legal and fiscal fees, administrative charges, and contingency based on bid prices.

25. Enter here any other items that may be required: ____________
____
____.

COPY COPY

FWPCA CONSTRUCTION GRANTS

CHECKLIST OF SEPARATE ATTACHMENTS NEEDED TO COMPLETE APPLICATION REVIEW
OHIO RIVER BASIN

1. _____Form 1350, "Assurance of Compliance,"(Title VI-Civil Rights Act of 1964).

2. _____FWPCA-T128, "Compliance Report", (Title VII-Civil Rights Act of 1964).

3. Planning Agency Review forms for conformance with the comprehensive plan developed for the area.

   *(a)_____State, Metropolitan, or Regional Clearinghouse Comments.

   *(b)_____Local Planning Agency Review, if not covered by Metropolitan Agency.

   *(c)_____Applicant's Statement dated and signed after receipt of the above.

4. _____A certified copy of the resolution of Applicant's governing body authorizing the filing of the application. The authorization must be current and must designate by name and title the applicant's authorized representative.

5. _____ Copy of engineering contract or other basis for engineering costs.

6. _____The current project engineering report containing at least information describing the present collection system and flow and loading of existing treatment plant if applicable. For new treatment plant, furnish design year, flow, loading and anticipated removal of BOD and suspended solids. Include breakdown of industrial and domestic population equivalents.

7. _____A statement of the current project status, including the anticipated bid opening date, the date contracts are to be awarded, and the date construction will begin.

*8. _____A map or layout showing the location of the sewage treatment plant and the location of any proposed sewers, lift stations or force mains for which federal aid has been requested. The map should also show the location of any sanitary sewers and exact points of any existing pollutional discharges.

9. _____An itemized construction cost breakdown of the lump sum cost listed on the application.

10. _____A statement discussing excess flows arising from the entrance of ground and surface waters, municipal controls now being practiced or proposed, and alternatives to bypass of the treatment plant.

11. _____A discussion of flooding hazards and measures to be taken to protect the proposed project from possible flood damage. Form OBR FH-1 may be used for this purpose.

12. _____An itemization of the number and type of operation and maintenance employees to be hired, as well as amount per year for labor, chemicals, utilities, etc.

13. _____Plans and specifications, if available.

14. _____A statement explaining the exact nature of any other Federal funds which may be used to finance the project.

15. _____Legal description of proposed project site if acquired.

THE ITEMS LISTED BELOW ARE OFTEN INADEQUATELY COMPLETED ON THE APPLICATION FORM.

16. _____A current general description of the project.

17. _____Description of public interest and necessity.

18. _____Propriety for federal aid.

19. _____Whether an election is required before the project may be undertaken. If yes, indicate what action has been taken.

20. _____Design population and design year of the project.

THE FOLLOWING ITEMS ARE ALSO NEEDED WHENEVER PROJECT BIDS HAVE ALREADY BEEN RECEIVED.

21. _____Bid tabulation(s).

*22. _____Bid proposal of the successful low bidder(s).

23. _____Evidence of bid advertising.

24. _____Resolution of governing body indicating tentative award, if any.

*25. _____Breakout of eligible construction costs based on bid prices of apparent low bidder.

26. _____Line item cost estimates based on bid prices for project technical services, legal and fiscal fees, administrative charges and contingency.

27. _____Site title opinion.

IF CONTRACTS HAVE BEEN AWARDED:

*28. _____Signed construction contracts.

29. _____Evidence of performance bond and other insurance.

*30. _____Executed change orders.

31. _____The latest itemized construction estimate of work completed by the contractor.

32. _____Copies of project payrolls.

NOTE: Items with an asterisk should be submitted in triplicate and other items should be submitted in duplicate to FWPCA through the State.

Items 31 and 32 should be submitted directly to FWPCA.

ANNEX B TO APPENDIX 6

MEMO LISTING LEGAL AND ADMINISTRATIVE COSTS ON ALL NORTHEAST REGION PROJECTS RECEIVING FINAL PAYMENT IN 1968

COPY

Lester A. Sutton
Regional Construction Program Director, FWPCA, Northeast Region,
Boston, Massachusetts

March 4, 1968

THRU: Rocco D. Ricci, Chief, Construction Grants Program, NY, NJ & Del, Metuchen, NJ

Julian M. Grossman, Program Administrator, Construction Grants Program, Metuchen, NJ

Payments Based Upon Legal and Administrative Costs

I would like to reopen the question of considering subject costs ineligible or, as an alternative, permitting payment of a flat percentage (1 or 2%) of construction costs without substantiation or documentation. This probably would have to be implemented by a change in the law or the regulations; however, based on the inordinate amount of time spent in verifying these costs prior to payment, such a change would be justified. I estimate that from thirty to fifty percent of the time of our Project Application Reviewers is consumed by review of legal and administrative costs.

In reviewing payments we find that more questionable items appear in these areas than in all other cost areas combined. These result in long distance telephone calls, correspondence, and cause delay in processing the payments. Even when the questionable items are finally determined to be eligible, they are not usually clear in the first submission by the Community, necessitating the inquiries. Further, review indicates that the bulk of the ineligible claims made by the communities are in the legal and administrative cost area.

As an example of what is involved, we selected four typical projects which were being processed during the week of February 19 - 23, 1968, and analyzed the amount of effort expended to pay these costs as against paying the remainder of the grant. The projects selected were three relatively small ones -- Hammonton/WPC-NJ-189, Lima/WPC-NJ-260, Peapack-Gladstone/WPC-NJ-187, and one larger project -- Rockland County/WPC-NY-274.

In the case of Rockland County at 28% of completion, there were 378 legal and administrative vouchers as against 173 for all other eligible costs. These amounted to $328,000, 1.5% of estimated total eligible costs (the percentage of legal and administrative costs to total costs is highest in the early stages of a project). In this case, the number of vouchers was so large that it became necessary to send a Project Application Reviewer into the field to examine them. The legal and administrative vouchers consumed more than 80% of the reviewer's time as the bulk of the questionable items were in these areas.

In the case of Hammonton, 37% of the Project Application Reviewer's time was expended in reviewing 1.6% of the costs. Copies of the vouchers, correspondence, and telephone conversation summaries for this payment are attached as Enclosure 1. Of three phone calls made, more than half the time was spent discussing and explaining legal and administrative costs.

For Lima, 40% of the PAR's time was consumed in reviewing 1.2% of the costs. Copies of the vouchers, correspondence, and telcon summaries for this payment are attached as Enclosure 2. It should be noted that the "arguments" and the items which are difficult for the Community to understand or accept (exclusion of temporary financing, time records for fiscal clerk,etc.) arise in the Fiscal, Administrative, and Legal Areas and are most time consuming.

For Peapack-Gladstone, 25% of the PAR's time was spent resolving 1% of the costs. Copies of the paperwork are attached as Enclosure 3. Here again, the bulk of the problems was in the Legal and Administrative Areas. The Community apparently took the attitude that it would be advantageous not to separate eligible from ineligible costs in the hope that we would inadvertently include some ineligible items in with the eligible ones. (This is quite common with many communities, particularly in the Legal, Fiscal, and Administrative Areas). Throughout our dealings with the Community representative, he expressed reluctance to isolate the eligible costs. This, of course, is time consuming. In this project, the estimated eligible legal and administrative costs were $3800 against a total eligible cost of $393,000.

In order to determine the average percentage of legal and administrative costs to construction costs, we reviewed all projects on which final payments were made in FY-1968 to date for both construction and legal and administrative costs. The tabulation following shows a range of .1% to 6.9% with an average of 1.2% for all projects. The following is a tabulation of these projects:

Project No.	Community	Construction Costs	Legal, Fiscal & Admin Costs	%
APW-WPC-Del-20	Comm. of Bridgeville	$ 772,367	$ 3,256	.4
" " Del-21	Millsboro	272,058	1,992	.7
WPC-NJ-32	Guttenberg	83,050	5,755	6.9
" NJ-59	Haddonfield	277,833	1,267	.5
APW-NJ-65	National Park Boro	326,218	4,152	1.3
WPC-NJ-70	Caldwell	148,138	6,564	4.4
APW-WPC-NJ-72	Denville	505,639	10,189	2.0
WPC-NJ-150	Hamilton	459,791	678	.1
" NJ-153	Cherry Hill	281,487	9,645	3.4
" NJ-158	Mandham	313,249	6,921	2.2
" NJ-180	Roxbury	303,229	1,400	.5
" NJ-181	Long Branch	42,956	1,190	2.8
" NJ-184	Green Brook	382,295	5,624	1.5
" NJ-185	Newton	354,000	8,963	2.5
WPC-NY-108	Canajohario	669,768	6,525	1.0
" NY-113	Norwich	559,577	1,053	.2
" NY-137	Brighton	113,545	2,166	1.9
" NY-167	Trumansburg	377,535	8,440	2.2
APW-NY-180	Port Henry	279,926	4,174	1.5
" NY-191	Akron	359,177	5,582	1.6
WPC-NY-192	Rochester	1,775,140	9,147	.5
" NY-210	Watkins Glen	192,865	2,188	1.1
" NY-239	Owego	569,585	1,328	.2
" NY-240	Brockport	825,437	11,881	1.4
" NY-243	Pittsford	163,755	2,547	1.6
" NY-254	Canastota	900,610	8,157	.9
" NY-265	Cornwall	138,815	1,811	1.3
" NY-270	Perinton	206,983	1,940	.9
	(28 Projects)	$11,655,028	$134,535	1.2

Based upon the analysis provided above, it seems obvious that a concerted effort to implement the suggested change would benefit the Construction Grants Program substantially.

Julian M. Grossman

Enclosures:
1. Paperwork on Hammonton
2. Paperwork on Lima
3. Paperwork on Peapack-Gladstone

cc:
L. A. Sutton, J. M. Grossman

ANNEX C TO APPENDIX 6

IN REPLY REFER TO

UNITED STATES
DEPARTMENT OF THE INTERIOR
OFFICE OF THE SOLICITOR
WASHINGTON, D.C. 20240

DEC 1 2 1969

Memorandum

To: Director, Division of State and Local Programs
Federal Water Pollution Control Administration

From: Associate Solicitor, Water Resources and Procurement

Subject: Draft of Proposed Regulation Change regarding Legal, Fiscal and Administrative Costs

Pursuant to your oral request, we have drafted a proposed change in regulations to allow the Commissioner to exclude legal, fiscal and administrative costs as ineligible for Federal grant assistance in the construction grants program.

This proposal is based on considerations set out in the explanatory preamble. These considerations developed, as you know, at the Regional Construction Grants Personnel Conference held a few weeks ago.

Theodore Rogowski

For the Associate Solicitor
Water Resources and Procurement

Enclosure

cc:
Assistant Secretary
Water Quality and Research

DEPARTMENT OF THE INTERIOR

Federal Water Pollution Control
Administration

[18 CFR Part 601]

WATER POLLUTION CONTROL
Grants for Construction of Treatment Works

Notice is hereby given that the Secretary of the Interior proposes to amend Chapter V of Title 18 Code of Federal Regulations, Part 601, subpart B, as set forth below.

Pursuant to section 8 of the Federal Water Pollution Control Act, as amended, Federal grant assistance is made to help finance municipal waste treatment facilities. The proposed amended subpart B would exclude as ineligible for Federal grant assistance those construction costs for such facilities which arise from legal, fiscal, and administrative services. The burden of conducting the Federal audit of vouchers for such costs has been found to be so disproportionate to the financial benefit to grantee of Federal funds as to make continued Federal participation in certain of these costs insupportable. Sound fiscal management dictates that these highly variable costs, contracted for and within the close supervision of the municipality remain primarily within the control, audit and payment responsibilities of the municipality. These amendments are proposed under the authority of section 10, 70 Stat. 506, as amended; 33 U.S.C. 466i; section 6, 70 Stat. 502, as amended; 33 U.S.C. 466e.

Interested persons may submit written data, views, or arguments in triplicate in regard to the proposed regulations to the Secretary of the Interior, Washington, D. C. 20240. All relevant material received not later than 45 days after publication of this notice will be considered.

The regulations will become effective upon republication.

It is proposed to amend the Regulations in 18 CFR Part 601 as follows:

601.25(d) is amended by adding thereto after the final sentence the following:

> "In determining the reasonable cost of the project, as provided herein, the Commissioner may exclude fiscal, legal, administrative and other expenses as he deems appropriate."

Secretary of the Interior

DATED:

ANNEX D TO APPENDIX 6
FUNCTIONS, DUTIES, AND RESPONSIBILITIES OF PRESENT COMPONENT UNITS OF THE CONSTRUCTION GRANTS OFFICE AT FWQA HEADQUARTERS

ENGINEERING OPERATIONS SECTION

Design

A. Will develop FWQA sewage treatment works design guidelines for use by consulting engineers. Guidelines will also be used by regional office engineers to check project plans and specifications. Several activities will be necessary to accomplish this, namely:

(1) Establish in-house working group on design and serve as Chairman-Secretary of meetings.

(2) Establish advisory committee of outside agencies and national organizations on design standards preparation.

(3) Review and analyze existing design standards to obtain basic information for inclusion in design criteria.

(4) Coordinate with R&D to obtain new or improved design criteria for inclusion in FWQA manual.

B. Assist regional offices in decisions on special technical problems involving design of proposed plants.

C. Will prepare periodic technical bulletin for distribution to Regional Construction Grants technical staff on new treatment process, new design criteria or operation techniques, which should be considered in review of new plant plans and specifications.

Operation and Maintenance

A. Coordinate program functions with State program grants.

B. Plan the development and maintenance of a "Plant Performance Evaluation Manual."

Upgrade minimum personnel requirement guidelines for existing and new sewerage works.

C. Plan rational program for implementing joint State-Federal plant inspection effort.

D. Plan and incorporate a nationwide plant operations "reporting system" to ensure meeting treatment requirement to realize water quality objectives.

Miscellaneous

A. Prepare guidelines to appraise grant projects consideration and resolution of infiltration and industrial waste problems and sources of waste as they may affect the control and treatment of municipal wastewaters.

B. Develop guidelines to appraise the adequacy of the consulting engineers' plant operating manuals.

C. Coordinate with the Division of Manpower and Training to ultimately insure that qualified personnel are available to operate sewerage facilities constructed with support from this program.

D. Coordinate with technical programs and regional offices to provide technical assistance to improve plant operators where needed.

E. Coordinate with research and development programs. Advise them of areas in need of research or development and assist in establishing appropriate priority.

EVALUATION AND RESOURCES CONTROL SECTION

General -- Collect, validate, store, analyze and report data on construction grants.

Fiscal Data

A. Maintain ledgers chronologically and by state; reconcile monthly with Regions; serve as liaison between Regions and division of financial management.

B. Maintain fiscal data systems to enable continuous reporting on:

1. Number of projects, cost and grant amount by location (state, river basin, county, municipality, congressional district), time, appropriation, allotment.

2. Increases, decreases, withdrawals.

3. EDA, ARC (212 and 214), APW.

4. Varying percentages (1%-55%).

5. Reimbursables--unfunded and partially funded.

6. State grants--regular and pre-financed--and related percentages.

7. Status--preconstruction, under construction, completed.

C. Prepare monthly reports on the above.

D. Develop other fiscal information

1. Compute all estimated and final (fiscal year budget) state allocations, by formula, for all given and proposed appropriations.

2. Review audits.

3. Oversee Grant Impact activity and reallotment of unused funds.

E. Oversee Regional Fiscal accounting and reporting operations, establish policy and guidelines, insure total, integrated, responsive system in continuous operation.

F. Maintain complete system of information on the backlog of sewage treatment projects and provide monthly and special reports on same.

Administrative and Technical Data

A. Maintain summary file on each grant project which contains over 50 items of extracted data.

B. Maintain filing and reporting system of contracted data on construction grant projects.

C. Publish Project Register monthly.

D. Prepare and publish monthly 20 city construction cost indexes on sewage treatment plants and sewers.

E. Maintain full range of data on the operation and maintenance of sewage treatment facilities.

F. Prepare and distribute quarterly report on various characteristics of plants audited during quarter.

G. Maintain data on each Region's activities in the processing grants (reviews, offers, payments, audits, etc.) and prepare semiannual summary reports.

Special Studies and Other Activities

A. Prepare and publish annually study on operation and maintenance of waste treatment plants.

B. Prepare for publication studies on construction costs of waste treatment facilities.

C. Prepare (research) studies on:

1. Per capita costs.

2. Waste stabilization ponds.

3. Problems in operating sewage treatment plants.

4. Profiles (characteristics) of plant operations.

5. Interceptor costs.

D. Continuously provide current data and reports for:

1. Legislative purposes

   to: Division of Financial Management,
   Bureau of Budget,
   Congressional Committees, and
   Offices

2. Information purposes

   to: Information Office,
   Other Agency Programs,
   Congressional Offices,
   State Agencies, etc.

3. Consulting services

   Regularly compile and prepare analysis of technical-administrative-fiscal data for engineering and manufacturing firms, financial management institutions, etc.

CONSTRUCTION OPERATIONS SECTION

Policy and Guidelines

A. Formulate regulations
B. Prepare forms
C. Develop instruction
D. Prepare manuals

Application Review and Approval

A. Review applications for eligibility and policy.
B. Review waiver of requirements and assurances.
C. Review and revise handbook as required.
D. Prepare instruction to supplement handbook.
E. Review Impact grants and approve for use of funds.

Interagency Coordination

A. Coordinate preliminary inquiry procedures with other agencies (HUD, EDA, FHA).
B. Represent FWOCA in Interagency Committee for Coordination of Water and Sewer Program.

Eligibility Determination

A. Maintain surveillance of project eligibility policies in Regions.
B. Review ineligible project request and prepare document for disapproval.
C. Resolve questions of eligibility with Regions.

Regional Surveillance

A. Review correspondence by Regions on project actions for conformance with policy and regulations.
B. Visit Regions on a regular basis to review operations and assess effectiveness.
C. Review reports of activities and project delays and take such action as is indicated.

Audit Review

A. Review and resolve audit exceptions and appeals.

Adjunct Program

A. Take all necessary actions related to adjunct program, including supplemental parts by EDA, ARC and the Regional Commissions.

B. Develop agreement with other agencies regarding adjunct programs.

Liaison with White House and Congress

A. Receive grant offer notification and work with Administration and Department Congressional Liaison Offices on advice to the White House and Congressional delegations. Prepare confirmation letter.

Labor and Civil Rights

A. Receive requests for wage determinations.
B. Request determination from Department of Labor.
C. Forward determinations to the Regions.
D. Coordinate with Department of Labor re labor standards.
E. Prepare and forward labor reports to Department of Labor.
F. Conduct the civil rights program, including preparation of policy and procedure instruction, review of affirmative action programs and civil rights assurances, and conduct of pre-award conferences.

Information Services

A. Answer Congressional telephone inquiries related to Construction Grants.
B. Represent the Administration at various meetings and conferences with Congressional delegations re the Construction Grants program.
C. Conduct liaison with public interest groups re the Construction Grants program.

ANNEX E TO APPENDIX 6

UNITED STATES
DEPARTMENT OF THE INTERIOR
Federal Water Pollution Control Administration
Northeast Region

Eligibility of Interceptors and Pumping Stations

It is sometimes difficult to specify the exact requirements for an eligible interceptor sewer. Each case must be examined carefully and all aspects analyzed before a final decision can be reached. However, the following items should be considered in arriving at a determination:

1. It should be noted that the purpose of our grants program is to provide for the construction of sewage treatment facilities and that collection sewers are not considered eligible for our participation.

2. The distinction between an eligible interceptor sewer and an ineligible main or trunk sewer depends upon the primary function of the line.

3. If the sewer line performs one or more of the following functions, it can be considered as being eligible under our program:

   a. If its primary purpose is to intercept sewage from a final point of the collection system and convey it directly to a treatment plant.

   b. If its primary purpose is to serve in lieu of an existing or proposed sewage treatment plant.

   c. If it serves more than one municipality.

   d. If it intercepts a substantial existing discharge of raw or inadequately treated sewage to a stream.

4. If the primary function of the sewer line is to collect sewage from houses, street laterals and other trunk sewers, it would be considered as part of the sewage collection system and would not be eligible under our program.

5. The fact that a sewer has a small number of house or lateral connections would not necessarily disqualify it as an interceptor sewer as long as its primary function meets the requirements indicated above.

6. Under certain circumstances, an eligible interceptor may discharge into a collection system rather than to a treatment plant.

7. A sewer line is not considered eligible as an interceptor merely because it parallels a stream.

8. An eligible outfall sewer is defined as the sewer line which carries the treated effluent from the plant to the point of final discharge.

9. In order to be eligible for Federal participation, a pumping station must meet the same requirements as [illegible] tor sewers.

APPENDIX 7

SECONDARY TREATMENT

		Page
1.0	PROBLEM	193
2.0	RECOMMENDATION	193
3.0	RATIONALE	194
4.0	CONSTRAINTS	195

APPENDIX 7
SECONDARY TREATMENT

1.0 PROBLEM

Currently proposed revisions to Part 601.25b of Federal Regulations imply the universal application of secondary treatment for construction grants. (In fact, "secondary treatment" is not specified by the revised regulation, but performance requirements corresponding to secondary treatment are called for). While secondary treatment is highly cost effective in reducing BOD in streams, some flexibility on an exception basis is desirable.

2.0 RECOMMENDATION

It is recommended that Section 601.25b of the rules and regulations be rewritten as follows. This rewrite emphasizes greater flexibility to the commissioner by the inclusion of exception procedures.

PROPOSED REWRITE OF SECTION 601.25(b), RULES AND REGULATIONS ON GRANTS FOR CONSTRUCTION OF WASTE TREATMENT WORKS

(b) To be eligible for a grant, a project must provide for an operable treatment works, or part thereof, which will treat sewage or industrial wastes of a liquid nature in order to abate, control, or prevent water pollution. As a minimum, such treatment shall be designed to provide for: substantially complete removal of all floatable and settleable materials, removal of 85 percent of five-day biochemical oxygen demand and suspended solids based on design flow and temperature climate, disinfection or other methods that result in substantially complete reduction of microorganisms and such additional treatment as may be necessary to meet applicable water quality standards, and to meet recommendations of the Secretary or order of court pursuant to Section 10 of the Federal Act.

Exceptions to this minimum treatment requirement will be made only upon written request to the Commissioner under the following conditions:

(1) Where lesser degree of treatment can be shown to meet applicable water quality standards and a firm commitment and an FWQA-approved schedule exists

Preceding page blank

for achieving the required minimum ("secondary") treatment by later improvements to the projected works.

(2) In the case of wastes discharged by a project into open ocean waters through an ocean outfall, such treatment shall be designed to provide as a minimum for: substantially complete removal of all floatable and settleable materials, and such additional treatment as may be necessary to meet applicable water quality standards and recommendations of the Secretary or order of a court pursuant to Section 10 of the Federal Act.

3.0 RATIONALE

Secondary treatment is more cost-effective for BOD reduction than primary. For a cost increase of roughly 30% (total treatment cost for a 10 mgd plant = 6-1/2c per 1000 gallon primary versus 8-1/2c per 1000 gallon trickling filter secondary)* the BOD removal increases 140% (about 35% primary to 85% secondary). The economics of secondary treatment are discussed from a different point of view in Section 2.2 of Appendix 5, "Financing".

FWQA will be providing added leadership and guidance in achieving water quality. While primary treatment may permit overall state water quality standards to be met in some places for the near future, the effluent still can cause a dangerous decrease in dissolved oxygen concentration near the outfall together with unsightly and odorous deposits as well as unhealthy levels of bacteria and viruses. Although the regulation would permit building a primary plant before ultimately upgrading it to secondary, both economic and political pressure would be applied to build the secondary capability at the outset. Indeed, since most of the difficulty in getting any treatment plant built in the first place is community inertia, many local officials would welcome pressure to build secondary plants in one step. The public too, when it votes a bond issue for a treatment plant, expects a cost-effective facility which provides a relatively clean effluent.

---

*R. Smith, WPCF Journal 40, 9, pp 1545-1574 (1968).

Secondary treatment effluent can feed most tertiary or advanced waste treatment processes. Thus, further upgrading of a plant will most economically be achieved by building at least secondary plants now. Secondary effluent can also readily be disinfected by chlorination where necessary to protect users downstream whereas primary effluent cannot be disinfected so dependably.

4.0 CONSTRAINTS

Many states are opposed to this regulation and a number of them will have to change their regulations and operation instructions. On the other hand most state and local officials are expecting this regulation to be put into effect eventually. Their most telling argument is that where water quality standards permit only primary treatment, the money saved in not building secondary plants can go into additional facilities such as interceptors. It is for this reason that a loophole should be provided in the draft regulation to allow the building of interceptors and primary plants as long as the secondary capability is firmly schedules. To ease the economic and administrative burden it is recommended that the regulation be promulgated now to take effect on all projects not yet included in the states' current one-year lists. Even with this proviso many projects will have to be re-engineered for upgrading to secondary.

APPENDIX 8

LISTING OF INTERVIEWS AND CONTACTS MADE BY THE STUDY TEAM

Page

1.0 STUDY TEAM COMPOSITION AND MEMBERS 199

2.0 REGIONAL OFFICE CONTACTS 200

3.0 STATE AGENCIES 204

4.0 LOCAL GOVERNMENTS 206

5.0 SPECIAL DISTRICTS 208

6.0 ENGINEERING CONSULTANTS 209

Preceding page blank

1.0 STUDY TEAM COMPOSITION AND MEMBERS

FWQA

John A. Green	Office of Management Analysis
Philip Wisman*	" " " "
John Scotton*	" " " "
Rudolph Dinunzio	" " " "
James Parker	" " " "
Vincent Jay	" " " "
Evan Dildine*	Headquarters, Construction Grants Office
Louise Saurel*	Operations Office
Hendon Crane*	Dallas Regional Office
Arvel Wilson*	" " "

MITRE

Dr. R. S. Greeley	Special Projects Department
W. D. Rowe	" " "
Dr. H. R. Hickey*	" " "
R. C. Landis*	" " "
J. B. Truett*	" " "

---

*Members of interviewing teams.

Preceding page blank

2.0 REGIONAL OFFICE CONTACTS

	Principal Personnel Interviewed
Pacific Southwest Regional Office, San Francisco	Paul DeFalco, Regional Director
	Richard L. O'Connel Director, Technical Evaluation
	Earl Thouren
	William Schroeder
	John Merrill, Alameda Basin Office
	Robert Rock, Alameda Basin Office
Northwest Regional Office, Portland, Oregon	James Agee, Regional Director
	Hurlon Ray, Director, State and Interagency Programs
	Earl Stevenson, Director, State Planning and Programs
	Cecil Ouellette, State Planning and Programs
	Gerald Riepe, Director, Construction Grants Program
	Gordon Wilson, Construction Grants Program
Southwest Central Regional Office, Dallas	Hendon Crane, Director, Office of Operations
	Arvel Wilson, Chief, Construction Grants
	Kenneth Kirkpatrick, Director, Planning

	Principal Personnel Interviewed
Southeastern Regional Office, Atlanta	Asa Foster, Director, Facilities Program
	Joseph Franzmathes, Deputy Director, Construction Grants
	Bryan Chesson, Program Coordinator
Middle Atlantic Regional Office, Charlottesville, Virginia	Eugene Jensen, Director
	R. F. Blaisdell, Deputy Director
	W. L. Carter, Director, Facilities
	J. B. Grant, Chief, Construction Grants Branch
	R. L. Tate, Chief, State Program Plans
	R. K. Tinsley, Chief, Surveillance Branch
	W. M. Colony, Director, Engineering and Evaluation
Great Lakes Regional Office, Chicago, Illinois	F. T. Mayo, Regional Director
	J. MacDonald, Chief, Construction Grants
	Todd Cayer, Project Officer, Engineering
	Ken Voight, Chief, Administrative Section
Missouri Basin Regional Office, Kansas City, Missouri	J. Radamacher, Regional Director
	Clem Eger, Chief, Operations
	Frank Terry, Chief, Engineering Section
	Earl Stevenson, Chief, Construction Grants

	Principal Personnel Interviewed
	Paul Leach, Chief, Planning
Ohio Basin Regional Office, Cincinnati, Ohio	Val Adamkus, Deputy Regional Director
	Vic Jelen, Chief, Operations
	I. Dickstein, Regional Program
	Sam Berman, Engineering, Project Offices, Construction
	H. Hornberg, Grants
	K. Schwab, Technical Program
	Mel Pfankucke, Chief, Administrative, Construction Grants
	Walt Muller, Planning
	M. Baumgarten, Administrative
	L. Gillimaster, Upper Basin
	G. Fitzpatrick. EEO
	S. Smith, Lower Basin
	Charles Mahoney, Chief, Planning
	R. DeSpain, State Program Plans
Northeast Regional Office, Boston, Massachusetts	L. Klashman, Regional Director
	L. Sutton, Chief, Construction Grants
	R. Ricci, Project Coordinator (Edison Office)
	S. Peterson, Chief, Construction Grants, New England

Principal Personnel Interviewed

C. Pease, Chief, Administrative

Bert Haig, Chief, Planning

3.0 STATE AGENCIES

	Principal Personnel Interviewed
Michigan	Art Corcoran, Chief, Construction Grants
Illinois	Ben Leland, Chief, Construction Grants
Missouri	Jack Smith, Executive Secretary
Kansas	M. W. Gray, Acting Chief Engineer
Ohio	Ben Ranson, Director
	B. Brice, Director, Planning State Clearinghouse
	J. Anderson, Planning
Indiana	Oral Hert, Director, Construction Grants
	Herb Youmans, Engineering
	Jim Blythe, Engineering
	Max Wolfe, Planning
	Ted Mickolon, Planning
Kentucky	W. Martin, Director, Construction Grants
	J. Kramer, Water Pollution Control Board
	Mike Herman, State Clearinghouse
Connecticut	Mr. Hupfer, Director, Construction Grants
	Mr. Fogarty, Engineering, Construction Grants, Water Pollution Control Board

	Principal Personnel Interviewed
New Hampshire	Mr. Metcalf, Director, Construction Grants, Water Pollution Control Board
Rhode Island	Mr. Maine, Director, Construction Grants, Water Pollution Control Board
Vermont	Mr. LaRosa, Director, Construction Grants
	Mr. Albert, Engineering, Construction Grants
Massachusetts	Mr. Greeley, Director, Construction Grants, Water Pollution Control Board
Texas	Robert Flemming, State Water Quality Board
Oklahoma	Charles Newton, State Department of Health
Georgia	Warren Griffin, Assistant to Executive Director, Water Quality Control Board
California	J. B. Gilbert, Director
	Paul R. Bonderson, State Water Quality Control Board
	Fred Dierker, San Francisco Bay Regional Water Quality Control Board
Utah	Calvin K. Sudsweek, Chief, Water Quality Section, State Division of Health
Oregon	Kenneth Spies, Director
	Joe Jensen, Chief, Sanitary Engineer
	Dale Nunamaker, Chief, Construction Grants, State Department of Environmental Quality

4.0 LOCAL GOVERNMENTS (MUNICIPALITIES, COUNTIES, TOWNSHIPS, ETC.)

	Principal Personnel Interviewed
Detroit	James Kegler, Head, Planning Staff, Detroit Metropolitan Water Services
Milwaukee	Charles Hintze, Assistant in Charge, Department of Water Resources
Jefferson City, Missouri	E. H. Rackers, Director, Office of Public Works
Kansas City, Missouri	Glen Hopkins, Director, Pollution Control Department
Louisville, Kentucky	Ed Meyer
	Jack Wilburn
	Carl Taylor
	Ken Evlandson
	C. Roehrig, Water Pollution Control Administration
Williamstown, Kentucky	Herb Caldwell, City Engineering Division
Dayton, Ohio	Bill Eiffert, Engineering, Water Division
Cincinnati, Ohio	Carl Volner, Engineering, City Water
Loveland, Ohio	Robert Chase, City Manager
Boston	Mr. Bergen, Director, Construction Grants, Boston Metropolitan District Commission
San Francisco	Robert C. Levy
	A. O. Friedland

	Principal Personnel Interviewed
San Jose	A. R. Turturici
	Frank M. Belick
Fort Worth, Texas	J. R. Hendricks, Director of Public Works
New Orleans	J. C. Powell, Commissioner
	E. F. Hughes, Chief Engineer
	N. P. Jeffery, City Consultant, Sewage and Water Board
Atlanta	Jack Cameron
	Ed Sams, Water Pollution Control, Division of Public Works
Gainesville, Georgia	Ray Keith, Assistant City Manager
Portland, Oregon	Robert Greeves
Hillsboro, Oregon	James Barney, City Manager
	Eldon Mills, Assistant City Manager

5.0 SPECIAL DISTRICTS (COG's, SANITARY DISTRICTS, ETC.)

	Principal Personnel Interviewed
Orange County, California, Sanitation District	Fred A. Harper
Los Angeles County Sanitation Districts	Walt Garrison
Trinity River Authority (Texas)	Robert Tharp, Regional Manager James Strawn, Assistant Regional Manager
Atlanta Region Metropolitan Planning Commission	Glen Bennett, Executive Director Jeffery Wangfield
Metropolitan Area Planning Council, Boston	L. Blank, Planning
Blackstone Valley (Rhode Island) Sewer District	Mr. Bonviscin
Middlesex County (New York) Sewage Authority	Mr. Popowski Mr. Seid
Rockland County (New York) Sewer District	Mr. Kendrick
Monmouth County (New Jersey) Planning Board	Mr. C. Pike
Ohio, Kentucky and Indiana Regional Planning Agency	B. Brock, Director of Planning

6.0 ENGINEERING CONSULTANTS

	Principal Personnel Interviewed
Northwest Region	
Stephens, Thompson & Runyon Portland, Oregon	Marvin Runyon, James Crom, Gilbert Miggs, Harvey Taylor
Cornell, Howland, Hayes, and Mayfield, Portland, Oregon	Lester Wierson
Pacific Southwest Region	
Brown & Caldwell, San Francisco	D. H. Caldwell
Kennedy Engineers, San Francisco	Kenneth B. Reynolds
James M. Montgomery Engineers	Carlos Compuzano
John Caraolla Engineers	H. Harvey Hunt
Jenks and Adamson, Palo Alto	John H. Jenks
South Central Region	
Freeze, Nichols, & Entress, Dallas	R. L. Nichols
Fowler & Graff, Dallas	Robert Pierce
Betz & Smith, Dallas	Russell Betz and Robert Smith
Southeast Region	
Wiedeman & Singleton, Inc., Atlanta	William Greene
Robert & Company, Atlanta	John Arnold
Jordan, Jones & Goulding, Atlanta	Charles Jones

	Principal Personnel Interviewed
Great Lakes	
Greeley & Hanson, Chicago	Mr. Crawford
Warren & Van Praggy, Chicago	C. R. Reeves and Robert Emmons
Robert H. Anderson Associates St. Charles, Illinois	B. G. Bosch
Missouri Basin	
Burns and McDonnell, Engineers, Kansas City, Missouri	Allen Wymore, Senior Professor, Engineering
	Leo Cunningham
	Wes Goodnow
Black & Veatch, Consulting Engineers, Kansas City, Missouri	H. H. Benjes, Consultant Supervisor
	Ed Farmer
	C. A. Mancn
	Jack Webb
	Tom Robinson
Ohio River Basin	
Kral, Zepf & Freitag, Louisville	George Kral
A. M. Kinney, Louisville	John Wiseman
LeFeber & Associates, Louisville	Harlan Mace
Loomis & Associates	Bob Loomis

Principal Personnel Interviewed

Northeast Region

Metcalf & Eddy, Boston	Mr. Duncan
Camp, Dresser & McKee, Boston	Mr. Root
Fay, Spifford & Thorndike, Boston	Mr. Cahaly

APPENDIX 9

LISTING OF RECOMMENDATIONS BY CATEGORY

	Page
CRITERIA FOR ACTION	215
RECOMMENDATION PERTAINING TO THE TRANSFER OF NEW TECHNOLOGY INTO PRACTICE	218
RECOMMENDATIONS ON MANAGEMENT INFORMATION SYSTEM FOR FWQA	218
FINANCIAL RECOMMENDATIONS	219
RECOMMENDATIONS ON PROCESSING OF APPLICATIONS	220
RECOMMENDATION ON SECONDARY TREATMENT REGULATION	224

Preceding page blank

APPENDIX 9
LISTING OF RECOMMENDATIONS BY CATEGORY

CRITERIA FOR ACTION

(This subject is discussed in detail in Appendix 1, "Criteria for Action." Particular aspects are discussed in Appendix 2, "Planning," and Appendix 5, "Financing.")

Recommendation: FWQA should develop clear Federal criteria for setting priorities for applying funds to areas of greatest need.

PLANNING RECOMMENDATIONS

(Number refers to section of Appendix 2 where recommendation is discussed.)

5.1 FWQA Should Develop National Plan

5.1.1 FWQA should develop a national-level plan that will lead quickly to the formulation of implementable schedules for action for each major and minor river basin in the nation.

5.1.2 FWQA management should make known its resolve to take whatever initiative is necessary to insure that implementable, comprehensive plans are quickly developed for each river basin, and that these plans are expeditiously implemented.

5.2 FWQA Should Restructure Organization and Revise Responsibility Assignment

5.2.1 Consolidate all planning functions into a division-level planning office within the Office of Operations at FWQA Headquarters, and perform a similar consolidation at each regional office to combine all regional planning functions into a major organizational component.

5.2.2 Restructure the organization of the Construction Grants operation both in Washington and in the regions, to accomplish the following purposes:

- To upgrade the organizational status of Construction Grant Program Office.
- To provide firmer assignment of responsibilities, both at Headquarters and in regions.
- To provide separate and clearly identifiable budgets within FWQA.

Preceding page blank

5.3 FWQA Should Issue Statements of Federal Policy Pertaining to Water Pollution Control; Statements on the Following Subjects Should be Included:

5.3.1 Definition of Planning Responsibilities

5.3.2 Definition of Interceptor Sewers

5.3.3 Retention of Storm Water for Subsequent Treatment

5.3.4 Intrusion of Groundwater into Old, Leaking Sewer Systems

5.4 FWQA Should Stimulate State and Local Planning

5.4.1 Promote complete coverage of all portions of each region by well-made local or multi-county plans. Working through state WPC agencies, encourage the continuation of competent existing groups, strengthening of weaker groups, and development of similar local groups in areas not covered.

5.4.2 Provide additional federal funds for state and local planning (perhaps by additional congressional appropriations or by including such planning under "feasibility studies" under Construction Grants).

5.5 FWQA Should Provide Guidance and Assistance to Local, Regional, and State Planning Agencies

5.5.1 Issue guidelines that identify the minimal content of local, regional, or basin plans, as required for implementation and for integration with plans for adjacent or more inclusive areas.

5.5.2 FWQA should establish guidelines for the minimal sizes of treatment plants, as a function of total population served and population density.

5.5.3 FWQA should specify those elements that should be included in each states' criteria or standards for treatment plant and sewer design, equipment, and materials. (No numerical requirements--only an identification of variables to be included).

5.5.4 FWQA should prepare a glossary of planning terms for use within its own organization and by external organizations involved in planning relating to water quality. This publication should indicate which federal agencies are generally engaged in which types of planning.

5.5.5 FWQA should encourage local, regional, and state planning agencies to include an engineer on their staff or retain an engineering consultant to participate in the development of plans.

5.5.6 FWQA should develop a methodology for estimating the costs of various types of planning, as applied to a range of particular situations.

5.6 FWQA Should Coordinate the Planning Activities at all Levels, to Achieve Implementable Basin Plans for All Major and Minor Basins

5.6.1 FWQA should assume responsibility for coordinating the planning activities and products both within its own organization and those of all external organizations, to insure that integrated, implementable river basin plans are developed for each basin. Systems program management procedures should be utilized. The responsibility for producing such plans should reside ultimately with the Director of the Headquarters Planning Office, and secondarily with his counterpart in each Regional Office.

5.6.2 FWQA should develop a planning strategy that will produce usable but incomplete plans within a short time, and will later produce comprehensive water quality plans for each river basin. The strategy should assure that data acquired for use in developing the comprehensive plan, and vice versa.

5.6.3 Regional offices should encourage state WPC agencies to insure coordination of local planning on the same intrastate basin, and regional office should monitor this effort. Regional offices should insure that all state WPC activities are coordinated, particularly those on the same river basin.

5.6.4 Provide Guidance for State Program Plans:

- Promote closer relationship between FWQA Headquarters plans--more FWQA leadership.
- Develop national guidelines for state program plans to insure compatibility with regional or interstate river basin plans, and to provide consistent format of presentation.
- Ask states to develop a statewide basin-by-basin water quality management plan to guide in allocating construction grant funds, and submit as part of the state program plan

(Section 7) no later than FY72. This plan should consider all other water quality plans including the water quality standards implementation plan.

- Issue additional guidelines for state priority systems, (1) to insure against gross inequities, (2) to direct attention and funds toward critical problem areas.
- Develop an objective method of evaluating State Program Plans.
- Printouts of state 5-year lists should include dollar value of projects.
- Encourage state WPC agencies to contact every community at least once a year, to increase reliability of 5-year lists.
- Critically review the information requested in State Program Plans, for purposes of simplification and deletion of unnecessary data.
- Evaluate pros and cons of a penalty system for late submittal of State Program Plans (e.g., reducing state's allocation by 1/12 for each month's tardiness).

RECOMMENDATION PERTAINING TO THE TRANSFER OF NEW TECHNOLOGY INTO PRACTICE

(This subject is covered in Appendix 3).

Recommendation: Establish at the federal level a methodology for technology transfer, including certification and technology transfer teams to bridge the gap between R&D and CG. The implementation of teams would be at the regional level, the planning of the overall program selection of projects and certification would be accomplished at the headquarters level.

RECOMMENDATIONS ON MANAGEMENT INFORMATION SYSTEM FOR FWQA

(This subject is covered in Appendix 4).

Recommendation: FWQA should immediately undertake development of an information system that will provide timely, organization-wide information in a form adapted to the needs of each managerial level. Such a system should utilize existing data bases and equipment to the maximum extent practical, and should define the needs for any additional data and for required modifications to existing equipment and software.

FINANCIAL RECOMMENDATIONS

(Numbers refer to section of Appendix 5, where recommendation is discussed.)

3.1 Develop Criteria for Applying Funds to the Greatest Need

Recommendation: That clear Federal criteria be developed for setting priorities to apply funds to the areas of greatest need.

3.2 Consider Additional Provisions in Proposed Legislation

3.2.1 Increase Incentives to States

- Give consideration to further modifying the allocation formula to take into account reported state needs.
- Give consideration to additional incentives to set up such corporate entities (as in Maryland) to treat all liquid wastes within that state.

3.2.2 Increase Incentives to Municipalities

- Give consideration to taking 20% of the appropriation for payment in the reimbursables, in addition to the 20% allocated to states contributing 25% of the cost and the 20% received for the particularly needy states.
- Give consideration to providing the Secretary with explicit authority to allocate the discretionary funds to specific projects within needy states as he may determine.
- In each enforcement conference, consider the sources of financing for the actions directed and report on arrangements made to make the allocations necessary to finance the projects.
- Give consideration to rules for the extension of capability by the Environmental Financing Authority to purchase bonds of municipalities on the basis of the need for the proposed treatment works.

3.3 Improve Payment Schedule

Make a payment to the applicant agency upon signing the construction contract.

3.4 Increase Funds and Manpower for Planning

- Request additional funds for grants under Section 3c of the Act, and increase federal planning studies funds by $1.64 million.
- Apply percentage of the Construction Grants funds to detailed engineering surveys and planning for regional and metropolitan treatment plants.

3.5 Coordinate Funds Among Other Agencies

- Consolidate grants for the purpose of planning and construction of sewers, treatment plants, and other liquid waste handling facilities under one granting agency.
- Form an interim agency operating group immediately at the national level with counterpart groups at the (federal) regional level to coordinate and administer all water quality-related grants now issued under FWQA, HUD, EDA, and FHA.

RECOMMENDATIONS ON PROCESSING OF APPLICATIONS

(Numbers refers to section of Appendix 6, where recommendation is discussed).

2.0 Improve Quality of Application

2.1 Issue a handbook for Construction Grant applicants and consulting engineers.

2.2 Issue checklists itemizing information needed by FWQA to complete review of application.

2.3 Institute preapplication meetings to include applicant, consulting engineer, state officials, and FWQA officials for all applications.

2.4 Develop a format that specifies the minimal information to be provided in the waste treatment portion of all engineering reports relating to Federal grants, irrespective of granting agency.

3.0 Simplify Certain Processing Procedures

3.1 Seek Department of Labor approval of a procedure whereby applicant may reference a file for wage determination rather than obtain actual figures from the Department of Labor.

3.2 Re-examine periodically the forms used in water-quality related programs, with a view toward simplification and deletion of unneeded information. In particular:

- Print forms on one side only, to ease the problem of making duplicates.
- Attachments should be labeled sequentially (1, 2, 3, ... or a, b, c, ...) as are Income Tax Schedules.
- Instructions should be written more clearly.
- Enlarge the size of print.
- All attachment forms to be submitted by the applicant should be represented in the main form.
- Decrease the time from inspection to payment by allowing contractor payments to serve as an estimate of percentage completion, for all but final payments.
- Include a line for showing state contributions.
- Validate or delete all acknowledgements.
- Eliminate the need for title opinions; the duly constituted authority will have eminent domain.
- Allow the use of titles rather than individuals as authorized representatives (present the practice in some Regions).

4.0 Delete Glaringly Cost-Ineffective Functions, Including the Following:

4.1 Processing of Legal/Administrative Costs

4.2 Reviewing Payrolls for Contractor Labor Compliance

5.0 Improve Inter-Region FWQA Consistency in Tasking and Manpower Accounting

- Obtain a commitment to establish uniform procedures and records systems in all FWQA Regions.
- Dissect each present regional procedure, and produce a single tentative procedure which will serve all regions.
- Conduct a 3-6 month study using appropriate techniques to determine the requirements of each procedural element (manhours and elapsed time) in the tentative procedure.
- Aggregate functions and install a records system that will allow simple association of manpower with work to be done.
- Establish a uniform regional procedure, and the related management information inputs, outputs, and decision parameters.

6.0 Improve Relations by Adopting FWQA-Wide Policies where Needed

6.1 Generate Uniform Policies for all Regions

6.2 Establish Adequate Construction Grants Headquarters Staff

6.3 Uniform Requirements for Certification of Treatment Adequacy

6.4 Definition of Interceptor Sewers

6.5 Develop Uniform Policy on Review of Plans and Specifications

6.6 Advise Applicants Specifically about Possible Loss of Funding Because of OEO Violations

6.7 Improve Relations with Applicants by Means of "Personalized Communications."

6.8 Other Policy Recommendations

The following candidates for FWQA policy are presented without comment:

- Allow the construction of interim facilities (such as primary treatment) that are part of a well made plan, which later phases them out or incorporates them into permanent facilities affording higher degrees of treatment.
- Consider adopting uniform policy on equipment performance guarantees; regional differences may "force" adoption of an unwanted policy.
- Continue and expand efforts to coordinate the water quality related activities of all Federal agencies.
- Accelerate the accumulation of background to form the basis for a policy on disposal of sludge at sea, and on the digestion of sludge to be so disposed of.
- Establish pre-construction rather than pre-award OEO conferences; contractors are reluctant to carry out the required investigations before award.
- Investigate the ramifications of allowing FWQA funds to be used for repair of very old sewers; plants are sometimes oversized by a factor of 3 or 4 to accomodate infiltration.
- If FWQA funds cannot be used for sewer repair, develop an information program to advise applicants and engineers of the diseconomies of allowing infiltration.
- Develop background for a policy on funding outfalls from primary treatment plants in coastal areas.
- Allow the use of Construction Grant funds for ocean surveys where they may affect investments in treatment plants of large scale.
- Develop uniform national design guidelines for waste treatment works (see attached letter from Burns & McDonnell Engineering Co.).
- Allow the use of FWQA funds for treatment of storm water from separate sewers in special cases.
- Operation and Maintenance, and Training
- Require designer of AWT plants to operate them for extended time (1-3 years) until proven.

- Make operators manual and training mandatory for Construction Grants offer.

- Through programs such as SCOPE and public-service TV spots, develop stimulus for attracting men into sanitary engineering and plant operation.

- Establish subsidy for operation and maintenance to promote efficient utilization of high cost facilities.

- Survey actual operational efficiency of existing plants.

- Develop approaches to upgrade the status of treatment plant operators.

- Develop a training seminar for Construction Grant applicants, consulting engineers, State WPC personnel.

- Promote "public education programs" on TV, relating to water quality; use 10-second, 1-subject spots covering single ideas.

- Develop a 2-week training seminar for Construction Grant personnel.

- Develop a well-equipped "academy" for training plant superintendents and key operators.

RECOMMENDATION ON SECONDARY TREATMENT REGULATION

(This subject is discussed in detail in Appendix 7).

Rewrite the Section 601.25b of the Federal Regulations pertaining to required level of treatment provided by facilities financed by Construction Grants, to provide the Commissioner greater flexibility in funding such projects. In particular, the following exception procedures to the minimum treatment requirements should be included:

(1) Where lesser degree of treatment can be shown to meet applicable water quality standards and a firm commitment and an FWQA approved schedule exists for achieving the required minimum ("secondary") treatment by later improvements to the projected works.

(2) In the case of wastes discharged by a project into open ocean waters through an ocean outfall, such treatment shall be designed to provide as a minimum for: substantially complete removal of all floatable and settleable materials, and such additional treatment as may be necessary to meet applicable water quality standards and recommendations of the Secretary or order of a court pursuant to Section 10 of the Federal Act.